SERVICEABILITY REPORT

FOR THE PROPOSED
CARSELDINE VILLAGE HEART LOT 5003

LOCATED AT
520 BEAMS ROAD, CARSELDINE QLD 4034

PREPARED FOR
DELUCA CORPORATION PTY LTD

BORNHORST
+WARD

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Bornhorst and Ward Project No: **23019**

If you have any queries regarding this proposal, then please contact: **Stewart Grant**

Revision	Date	Description	Author	Rev.	App.
A	10/Nov/2023	DRAFT REPORT	MK	RG	
B	13/Dec/2023	For Approval	MK	RG	RG
C	14/Dec/2023	For Approval	MK	RG	RG
D	8/Mar/2024	Further Issues Response	MK	RG	RG
E	27/Sep/2024	Engineering Drawings Revised	SG	RG	RG

RPEQ: 07048 Robert Gray

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1. INTRODUCTION

Bornhorst and Ward has been commissioned to investigate and report on the serviceability requirements pertaining to the proposed residential development located within 520 Beams Road, Carseldine, QLD 4034 (Lot 7003 on plan SP331690). In particular, it is on lot 5003 of the Stage V subdivision of the Carseldine Village. The proposal consists of constructing a residential tower. Plans of the proposed development layout can be seen in Appendix A.

This document reports on the existing and proposed civil works and infrastructure required as part of the proposed development. The engineering requirements for this proposal shall be in accordance with Engineering Best Management Practices and the State Planning Policy (2017). This development falls under the Carseldine Village PDA within the Brisbane City Council area.

This report outlines the preliminary design methodology in support of a Development Application and should be read in conjunction with other documents issued by the consultant team.

2. SITE CHARACTERISTICS

2.1 LOCATION AND EXISTING FEATURES

The development site, located at 520 Beams Road, Carseldine is currently undergoing a subdivision. The following site characteristics we expect upon the completion of the subdivision are:

- The site is bound by a public plaza to the north, Plaza Place to the east and Meander Street to the south and west;
- The development site is comprised of scattered grassland;
- The total area of the site is approximately 0.141 ha;
- The site is only accessible from Meander Street.
- No easements are expected to exist for the site.
- Cabbage Tree Creek is about 400m south of the site.

Figure 1: Site Locality Plan

2.2 PROPOSED DEVELOPMENT

The following points outline the extent of works for the proposed development:

- A residential development with a basement carpark.
- The site will only be accessible to vehicles from Meander Street. Pedestrians will be able to access the site from Plaza Place.

Refer to the development drawings in Appendix A for further details of the proposed development.

2.3 TOPOGRAPHY AND CATCHMENT CHARACTERISTICS

The expected topography and catchment characteristics at the conclusion of the subdivision works are as follows:

- The high point of the existing site is RL 16.0m AHD located on the western edge of the site;
- The development falls from the high point at an approximate grade of 1.2% to a low point of RL 15.5m AHD along the eastern edge of the site;

- During minor events and major storm events, runoff from the site discharges as overland flow over the eastern edge of the development site to Plaza Place;
- The site is not expected to have any external catchments.

See the survey plan in Appendix C for more information.

2.4 EXISTING FLOODING CONDITIONS AND FREEBOARD REQUIREMENTS

Information obtained from the Brisbane City Councils Floodwise Property Report for the site indicates that the current site is subject to flooding from Cabbage Tree Creek. Characteristics of the flooding are as follows:

- Likely flooding during 1% and 2% AEP events
- The flooding occurs on the eastern portion of the site.
- The 1% AEP flood level is 14.7m.
- The site has low risk of coastal storm tide.

Please refer to the Brisbane City Council's Floodwise Property Report in Appendix C and the Flood Overlay Map in Figure 2 below for more details.

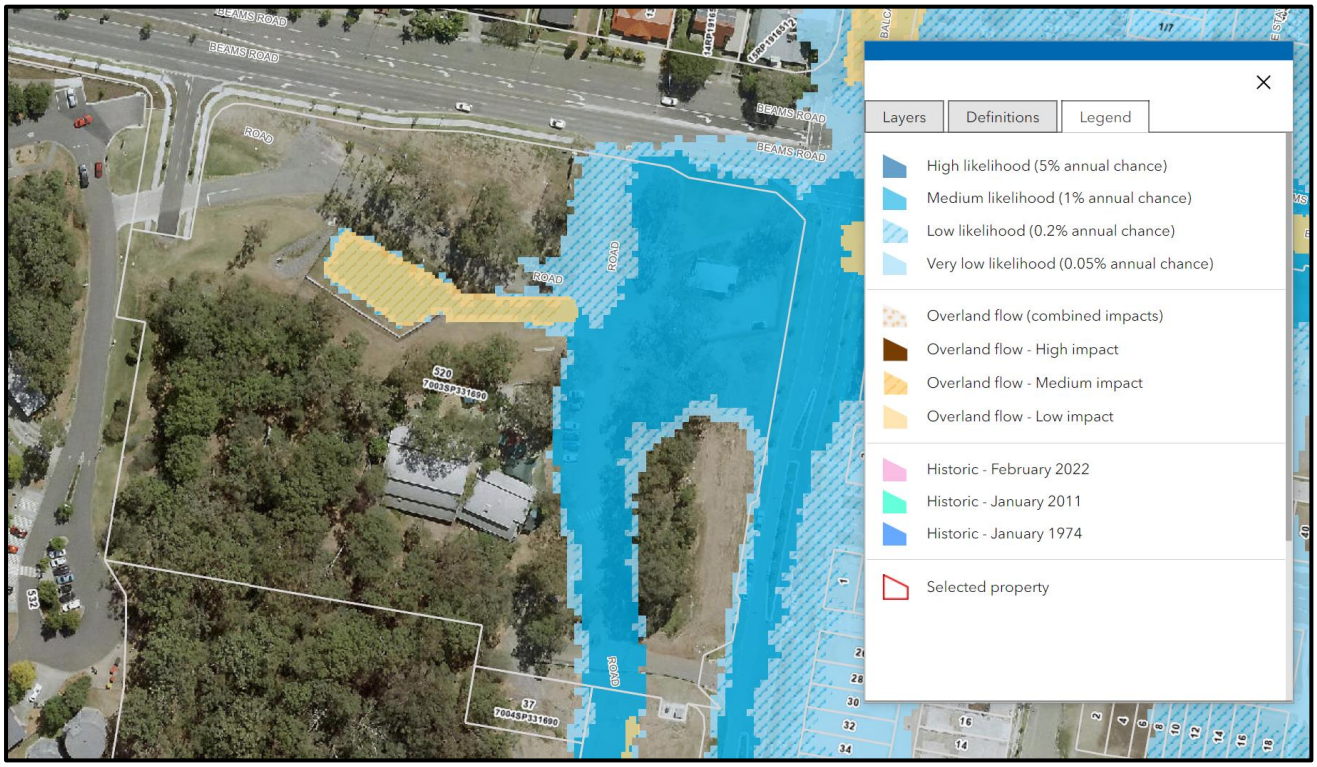


Figure 2: Brisbane City Council Interactive Flood Map

Design levels for the building must comply with the flood immunity standards specified by Brisbane City Council's City Plan (2014). The development will be assessed against the flood levels determined from our investigations. In accordance with the Brisbane City Council City Plan (2014), the minimum flood freeboard requirements would therefore be in order of:

Table 1: Flood Freeboard Requirements

Development Area	Council Flood Freeboard Requirements (AHD)	Council Required Development Level (AHD)	Development Level (m AHD)
Building Floor level (Multiple Dwellings 4+ Storeys)	Category C	1% AEP flood level	14.7
Basement entry (Class 2)	Category C	1% AEP flood level + 300mm	15.0
Essential services (including lifts)	Category A	1% AEP flood level + 500mm	15.2

Table 8.2.11.3.C, Table 8.2.11.3.D and Table 8.2.11.3.L of the Brisbane City Council's Flood Overlay Code were used to determine recommended development levels. The flood immunity levels have been based on a BCA building classification of "1-4" and "5, 6 or 8" within Table 8.2.11.3D. Flood planning level categories associated with this building classification have been deemed as A & C.

Table 1 above states the relevant flood immunity levels for the site. The site can reduce the likelihood of flooding by filling the site to at least the recommended development level. It should be noted that the site we receive after the subdivision is expected to have the lowest elevation of 15.5m AHD. As a consequence, we expect a low risk of inundation. As a result, the basement entry appears to be the critical design level relative to the Meander Street pavement under construction.

3. EXISTING AND PROPOSED CIVIL WORKS AND INFRASTRUCTURE

3.1 STORMWATER

3.1.1 Expected Infrastructure

The expected stormwater infrastructure based on the civil design drawings from KN group for the subdivision indicate the following infrastructure:

- An existing 900mm stormwater pipe connects the manhole to the field inlet which subsequently discharges to the stormwater main in Plaza Place.
- A 1200mm stormwater pipe enlarging to 1350mm is located under Meander Street.
- A field inlet on the southwestern corner of lot 5003 is connected to the stormwater main under Meander Street. This is the legal point of discharge for lot 5003.
- The stormwater infrastructure has been built for a fully developed catchment.

KN group infrastructure can be found in Appendix C of this report.

3.1.2 Proposed Infrastructure

The following points outline the proposed stormwater infrastructure for the development site:

- Roof water from 5003 will be collected internally and discharged to the legal point of discharge.
- Major events for lot 5003 will discharge as overland flow onto Meander Street.
- As the site is part of Carseldine Village which is directing adjacent to Cabbage Tree Creek, no stormwater detention is expected to be required as its located within the lower third of the catchment.
- Considering the development works area for 5003 is less than 2500m^2, there are no stormwater quality requirements under BCC's 2014 City Plan and as a result, no stormwater quality treatment measures are proposed.

Refer to Bornhorst and Ward's Stormwater Management Plan for further details. Refer to the engineering drawings in Appendix B for further information.

3.2 EARTHWORKS

Bulk earthworks will be required to excavate the basement of 5003 and grade the site appropriately. A detailed earthworks plan will be prepared as a part of the detailed design.

The site has been identified on Brisbane City Councils Potential and Actual Acid Sulphate Soils Overlay Map, refer to Figure 3 below. As the proposed development is to undertake filling and excavation below RL20.0m AHD for lot 5003, it is anticipated that Acid Sulphate Soils may be encountered. Therefore, it is recommended that an Acid Sulphate Soil investigation be completed as part of the detailed geotechnical investigation conducted for the site. If Acid Sulphate Soils are present, then an Acid Sulphate Soil Management Plan will be required.

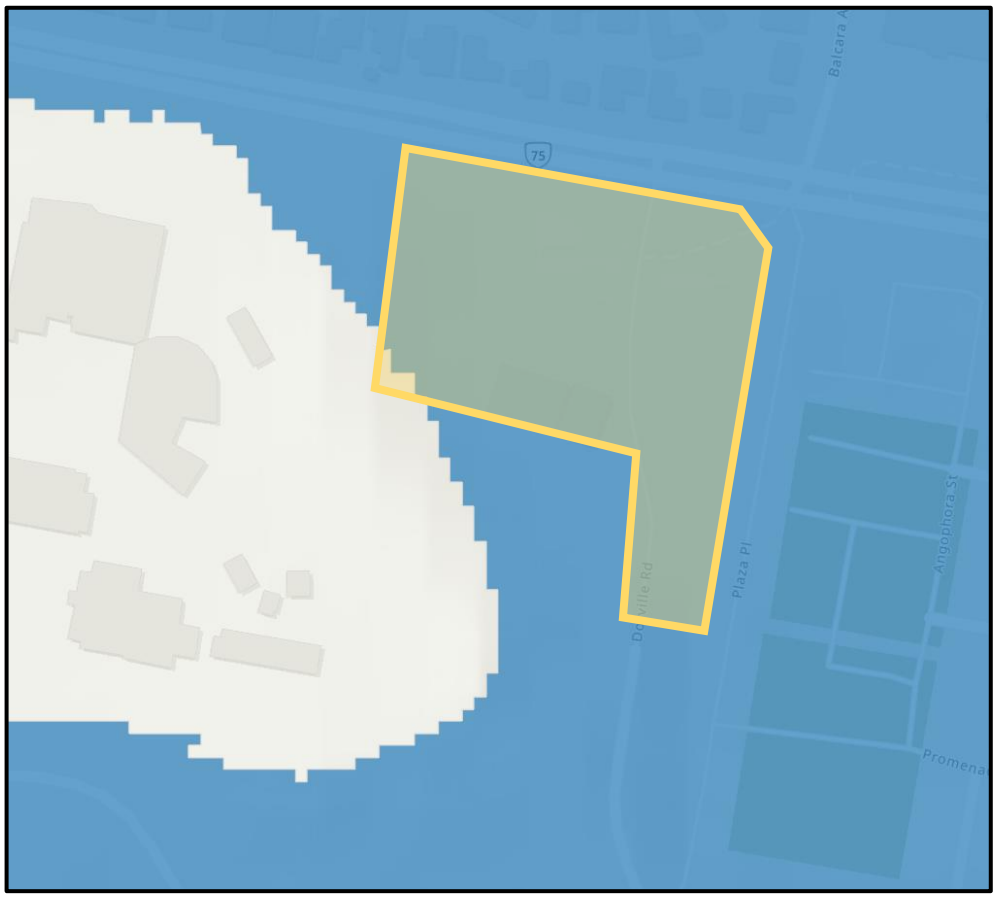


Figure 3: Brisbane City Council Potential and Actual Sulphate Soils 5-20m

All earthworks will be undertaken in accordance with the Brisbane City Council guidelines.

3.3 ROAD WORKS

No roadworks are proposed as part of this development.

Refer to the engineering drawings in Appendix B for further information.

3.4 SEWER

3.4.1 Existing Infrastructure

The expected sewer infrastructure based on the civil design drawings from KN group for the subdivision indicate the following infrastructure:

- A DN160 sewer main drains under the south eastern section of Meander Street.
- Existing sewer property connections to this main currently services lot 5003 along the southern and western boundaries respectively.

KN group infrastructure can be found in Appendix C of this report.

3.4.2 Proposed Infrastructure

The proposed sewer infrastructure for this development is as follows:

- It is expected that the connections provided as part of the subdivisions will be able to service the proposed development.

Refer to Appendix B for preliminary drawings of the proposed sewer works.

3.5 WATER

3.5.1 Existing Infrastructure

The expected water infrastructure based on the civil design drawings from KN group for the subdivision indicate the following infrastructure:

- A DN250 water main in the verge of Meander Street along the western and southern boundaries of the development site.

KN group infrastructure can be found in Appendix C of this report.

3.5.2 Proposed Infrastructure

The proposed water infrastructure for the development is as follows:

- Two new connections from the existing DN250 water main under the road reserve of Meander Street will be constructed to service the development site.
- A connection for lot 5003 to provide fire and domestic uses.

Refer to Appendix B for preliminary drawings of the proposed water works.

3.6 ELECTRICITY

The expected electrical infrastructure based on Robin Russell & Assoc. drawings for the subdivision works is

- The underground electrical infrastructure is located on the far side road reserve of Meander Street for lot 5003.
- A property connection to lot 5003 is provided by a road crossing conduit.

Robin Russel & Assoc. plans of the expected electrical infrastructure at the conclusion of the subdivision works can be found in Appendix C of this report.

Electrical services required for the proposed development including assessment of the existing infrastructure capacity will be designed and determined by an electrical engineer and will be assessed by Energex during the detailed design phase of the development.

3.7 COMMUNICATIONS

The expected communications infrastructure based on Robin Russell & Assoc. drawings for the subdivision works is

- The communications infrastructure is located on the far side road reserve of Meander Street for lot 5003.

Robin Russel plans of the expected communications infrastructure at the conclusion of the subdivision works can be found in Appendix C of this report.

All works required to provide communication services to the proposed development will be undertaken with the relevant service providers approval and coordination.

4. BRISBANE CITY COUNCIL CODES

The relevant Brisbane City Council Codes with respect to engineering aspects for assessment of the Development Application have been addressed. The codes will assist in assessing operational works requirements. The codes addressed in this report include:

- Filling and Excavation Code
- Flood Overlay Code
- Potential and Actual Acid Sulphate Code

The completed codes can be found attached in Appendix D of this Report.

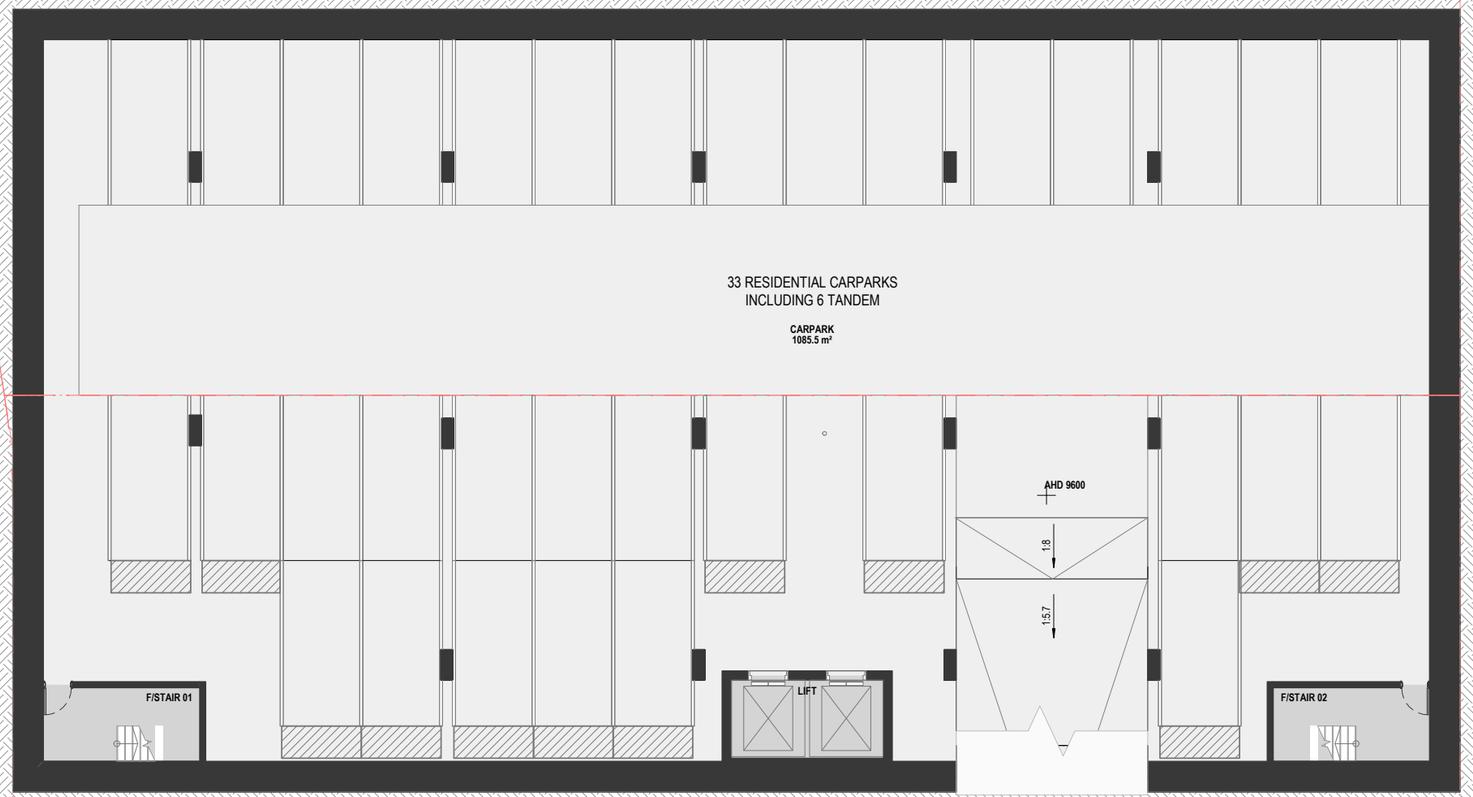
5. SUMMARY

This reporting relating to the proposed retail and residential development located at 520 Beams Road, Carseldine has shown the following:

- The site is contained within the Carseldine Village PDA masterplan and the development is generally in accordance with the masterplan. As a result, no major upgrades or amendments are required to service the project.
- The proposed development site has a 1% AEP flood level of 14.7m. The site is expected to be above this flood level. Basement entry is to be above 15.0m AHD.
- Minor stormwater flows are directed via a piped network to the legal point of discharge.
- As the site is located within the lower third of the catchment of Cabbage Tree Creek, it is unlikely that stormwater detention will be required due to the potential adverse effects.
- No stormwater quality measures are expected.
- Major earthworks will be required to construct the basement of the residential building under lots 5003 and 9001.
- Existing sewer and proposed water connections to lot 5003 are proposed to service the development. Urban Utilities will be required to confirm the suitability of these connections and the capacity of the existing network.
- There is existing electrical and telecommunications surrounding the site which may be used to service the development.

APPENDIX A

DEVELOPMENT DRAWINGS



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SK 312

1
SK 311

1
SK 310

architectus™ Conrad Gargett

We acknowledge the Traditional Custodians of the land on which this project is sited, and pay respects to their Elders past, present and emerging.

Revision

REV	DESCRIPTION	DATE	APP.
1	Prelim EDQ Pack	09/08/2024	DF

Client
DELUCA

Project
THE VILLAGE CARSELDINE

Drawing
5003 - BASEMENT 02

PRELIMINARY

A1 Scale 1 : 100
Project No. 23.0159
Revision 1

Number SK - AR - DR - SK 090

Details

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SK 312

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SK 311

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SK 310

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Revision

REV	DESCRIPTION	DATE	APP.
1	Prelim EDQ Pack	09/08/2024	DF

Client
DELUCA

Project
THE VILLAGE CARSELDINE

Drawing
5003 - BASEMENT 01

PRELIMINARY

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Project No. 23.0159
Revision 1

Number SK - AR - DR - SK 091

Details

Nominated Architect : Lawrence Toaldo NSWARB Reg. 10255.
Nominated Architect : Ray Brown NSWARB Reg. 6359.

0mm 40 80mm

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Revision

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1	Prelim EDQ Pack	09/08/2024	DF

Client
DELUCA

Project
THE VILLAGE CARSELDINE

Drawing
5003 - GROUND FLOOR

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Revision 1

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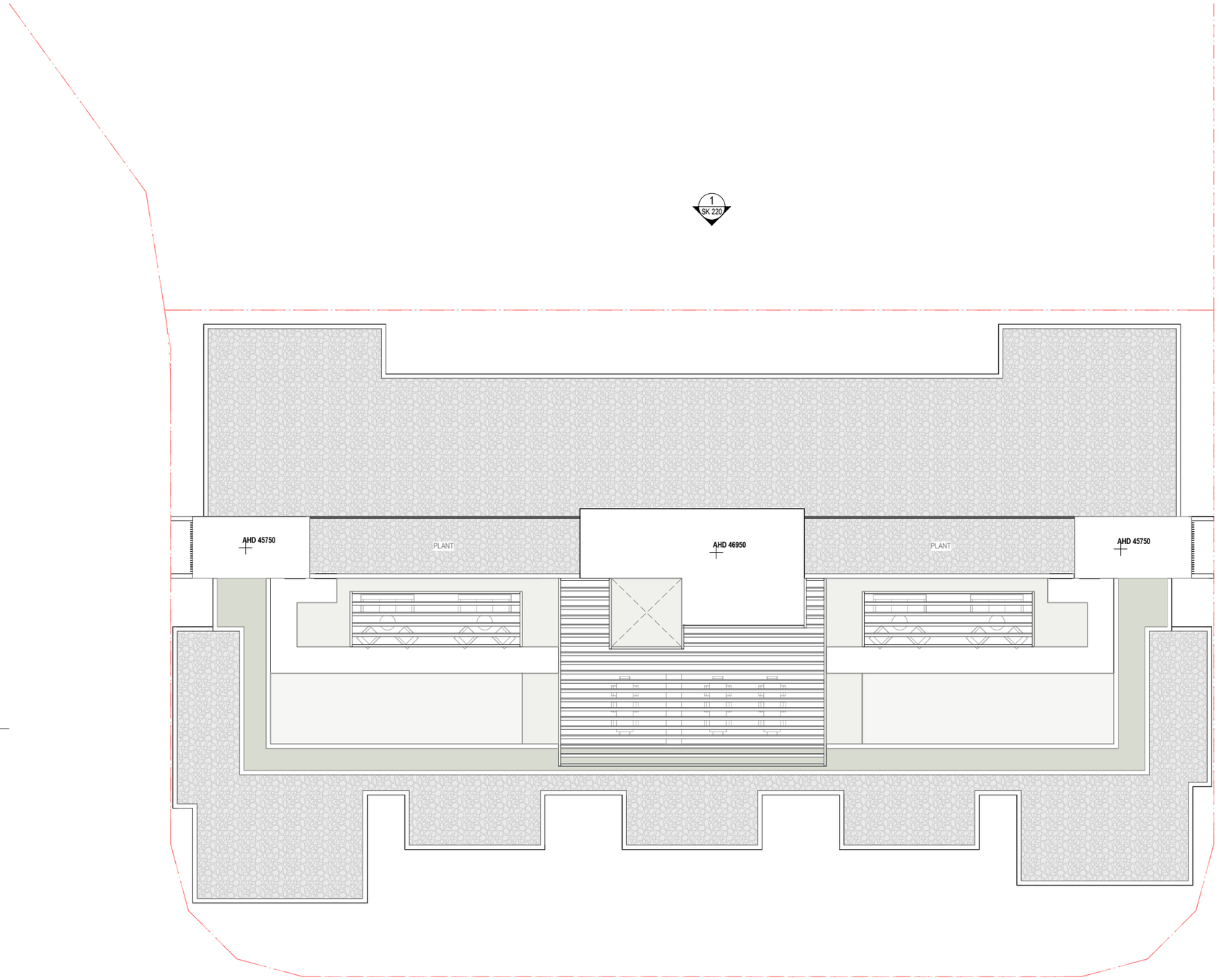

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Client

DELUCA

Project

THE VILLAGE CARSELDINE

Drawing

5003 - ROOF PLAN

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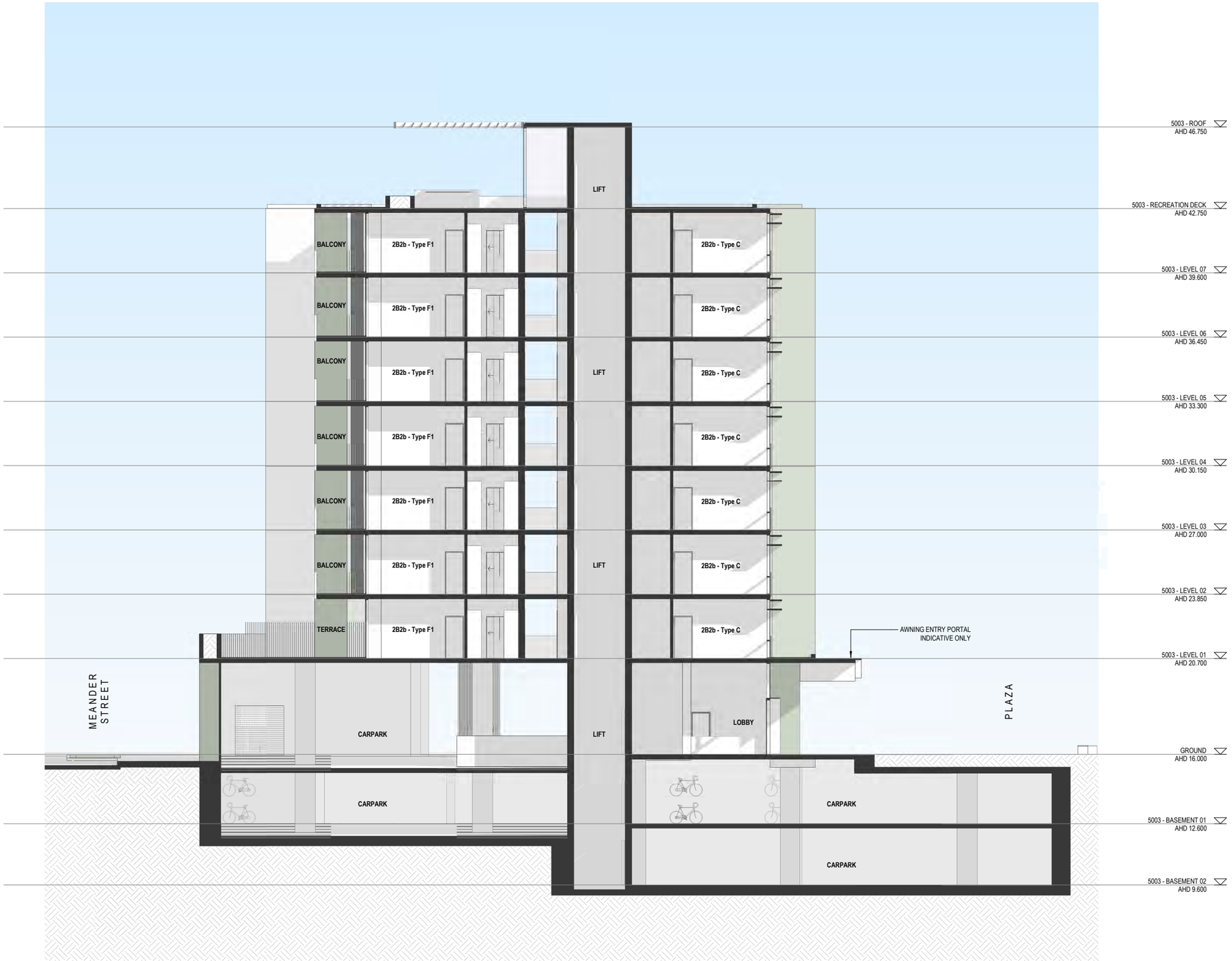

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Revision

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1	Prelim EDQ Pack	09/08/2024	DF

Client
DELUCA

Project
THE VILLAGE CARSELDINE

Drawing
5003 - SECTION 02

PRELIMINARY

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Revision 1

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Details

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Revision

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1	Prelim EDQ Pack	09/08/2024	DF

Client

DELUCA

Project

THE VILLAGE CARSELDINE

Drawing

5003 - SECTION 03

PRELIMINARY

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Revision 1

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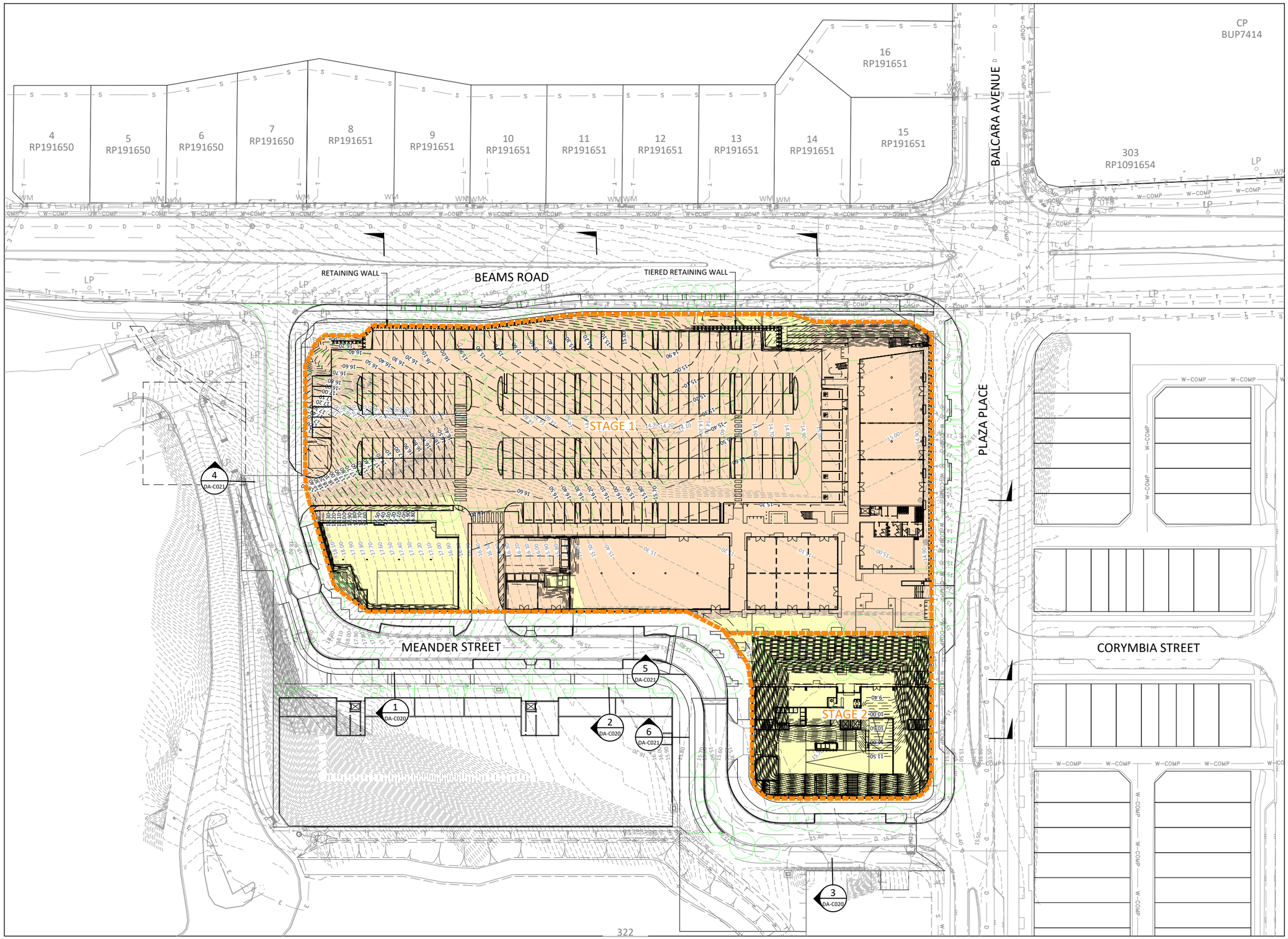
APPENDIX B

ENGINEERING DRAWINGS



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EARTHWORKS

PROPOSED

CUT

FILL

ESTIMATED VOLUMES

BULK EARTHWORKS VOLUMES
(EXCLUDING BULKING FACTORS)

CUT TO FILL (IF SUITABLE):	8,000m³
IMPORT FILL:	300m³

LANDSCAPING (BY OTHERS)

STAGING

THIS DRAWING IS BEST VIEWED IN COLOUR AND ON AN ELECTRONIC DEVICE

PROJECT NORTH

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SCALES — UNREDUCED / REDUCED

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DEVELOPMENT APPLICATION

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http://docs.bornhorstward.com.au/revision/

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F	31.05.24	MINOR AMENDMENTS	ETA	ETA		
E	17.04.24	UPDATED BASEMENT & RETAINING WALLS	ETA	ETA	RG	
D	10.04.24	FOR COORDINATION	ETA	ETA		
C	08.03.24	FURTHER ISSUES RESPONSE	ETA	ETA		

ASSOCIATED CONSULTANTS

APPROVED
RPEQ
DATE

CHECKED
DATE

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CLIENT: DE LUCA CORPORATION PTY LTD

PROJECT: CARSELDINE VILLAGE

SUBJECT: EARTHWORKS LAYOUT

PROJECT No. 23019

DRAWING No. DA-C010

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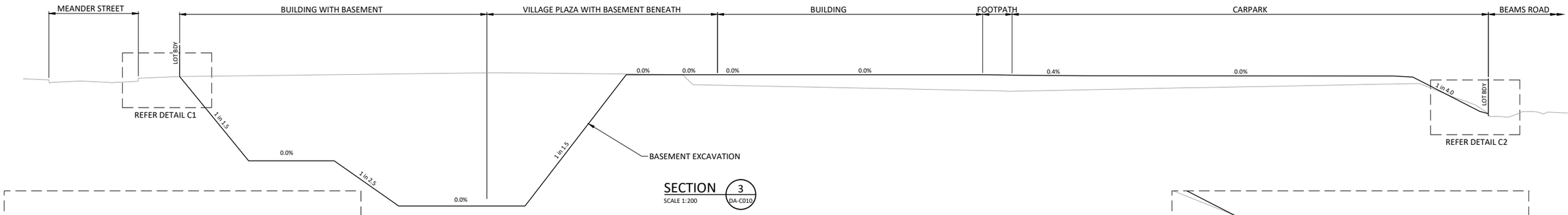

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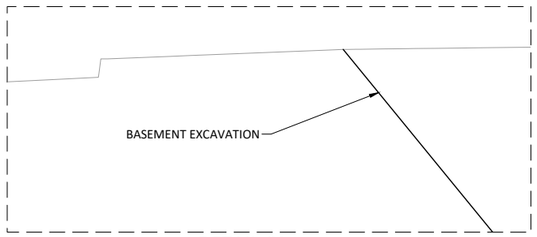

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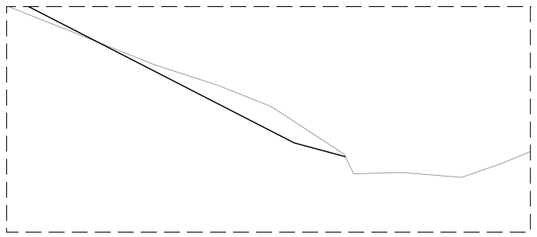

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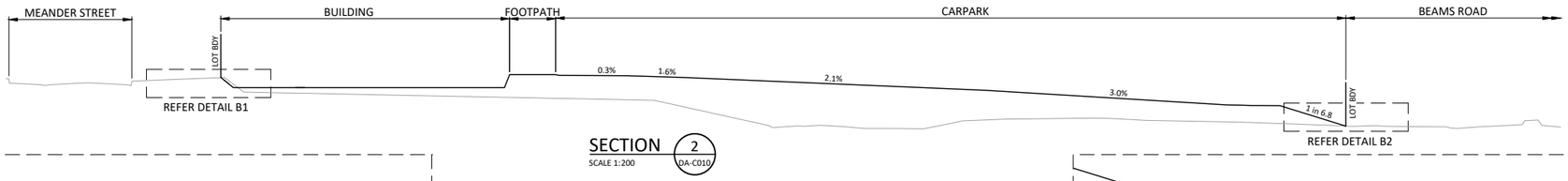

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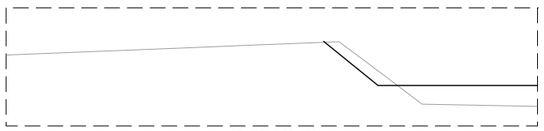

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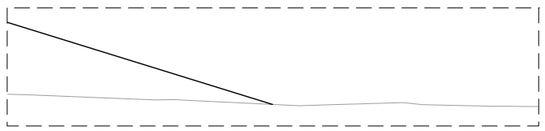

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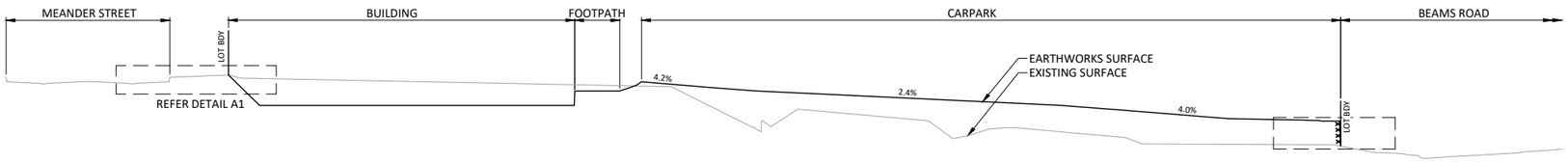

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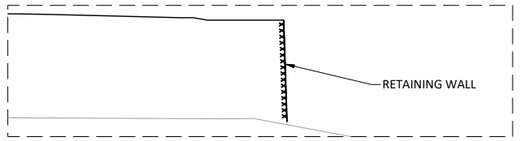

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A3 REDUCED

SCALES — UNREDUCED / REDUCED

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STATUS

DEVELOPMENT APPLICATION

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CLIENT
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PROJECT
CARSELDINE VILLAGE

SUBJECT
EARTHWORKS SECTIONS SHEET 1

PROJECT No.
23019

DRAWING No.
DA-C020

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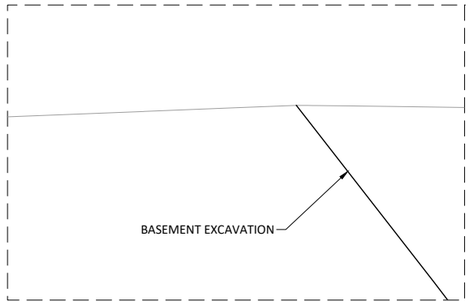

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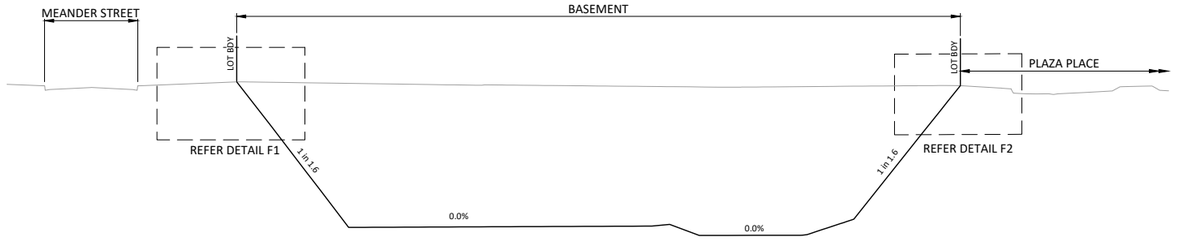

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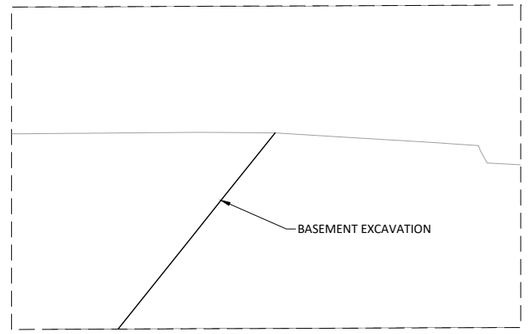

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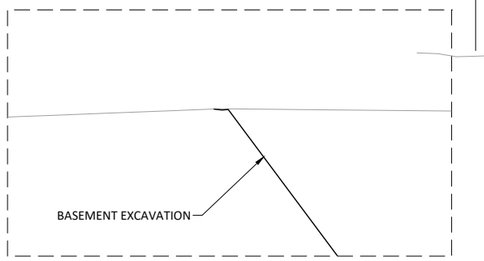

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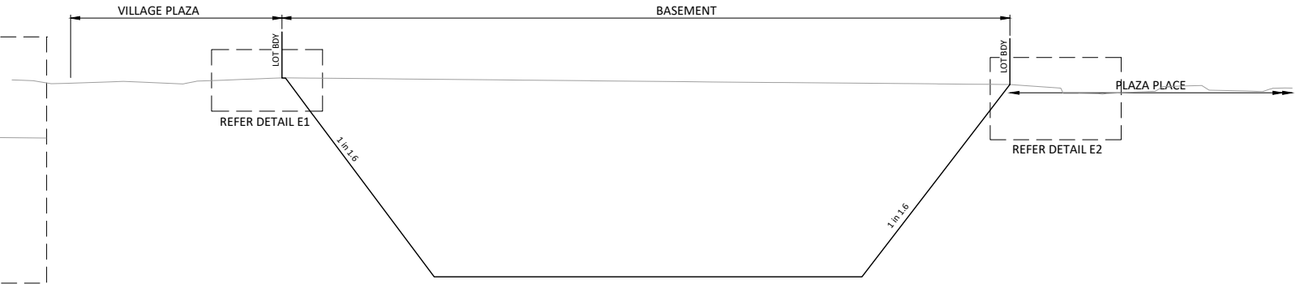

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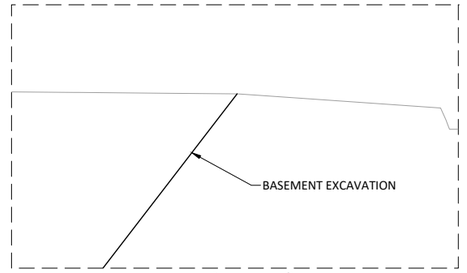

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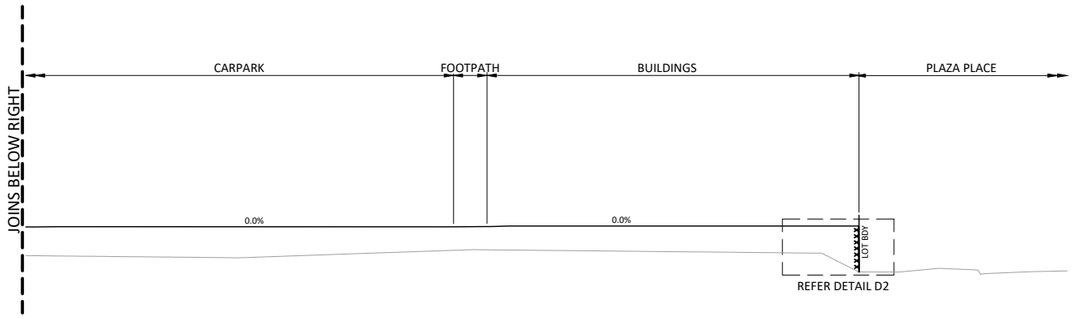
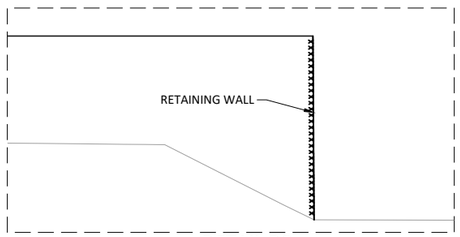
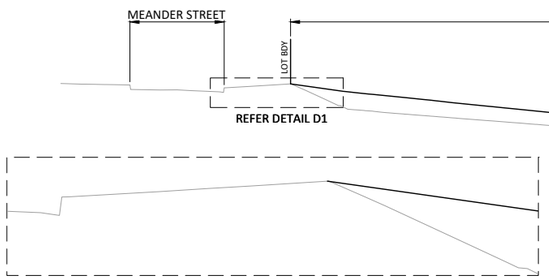




DETAIL D2
SCALE 1:50



DETAIL D1
SCALE 1:50

SECTION 4
SCALE 1:200 DA-C010

THIS DRAWING IS BEST VIEWED IN COLOUR AND ON AN ELECTRONIC DEVICE

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES

A1 UNREDUCED
A3 REDUCED

SCALES UNREDUCED / REDUCED

0 0.5 1 1.5 2 2.5 m 1: 50 / 1: 100

0 2 4 6 8 10 m 1: 200 / 1: 400

STATUS

DEVELOPMENT APPLICATION

SCAN QR CODE TO CONFIRM CURRENT DRAWING REVISION
http://docs.bornhorstward.com.au/revision/

REV	DATE	DESCRIPTION	DWN	DES	CHK	APP
G	27.09.24	UPDATED LOT 5003 BASEMENT EXCAVATION	SG	SG	RG	
F	31.05.24	MINOR AMENDMENTS	ETA	ETA		
E	17.04.24	UPDATED BASEMENT & RETAINING WALLS	ETA	ETA	RG	
D	10.04.24	FOR COORDINATION	ETA	ETA		
C	08.03.24	FURTHER ISSUES RESPONSE	ETA	ETA		

ASSOCIATED CONSULTANTS

APPROVED
RPEQ
DATE

CHECKED
DATE

BORNHORST +WARD
+61 (7) 3013 4699 www.bornhorstward.com.au

CLIENT
DE LUCA CORPORATION PTY LTD

PROJECT
CARSELDINE VILLAGE

SUBJECT
EARTHWORKS SECTIONS SHEET 2

PROJECT No.
23019

DRAWING No. DA-C021

REVISION G

ORIGINAL SIZE A1

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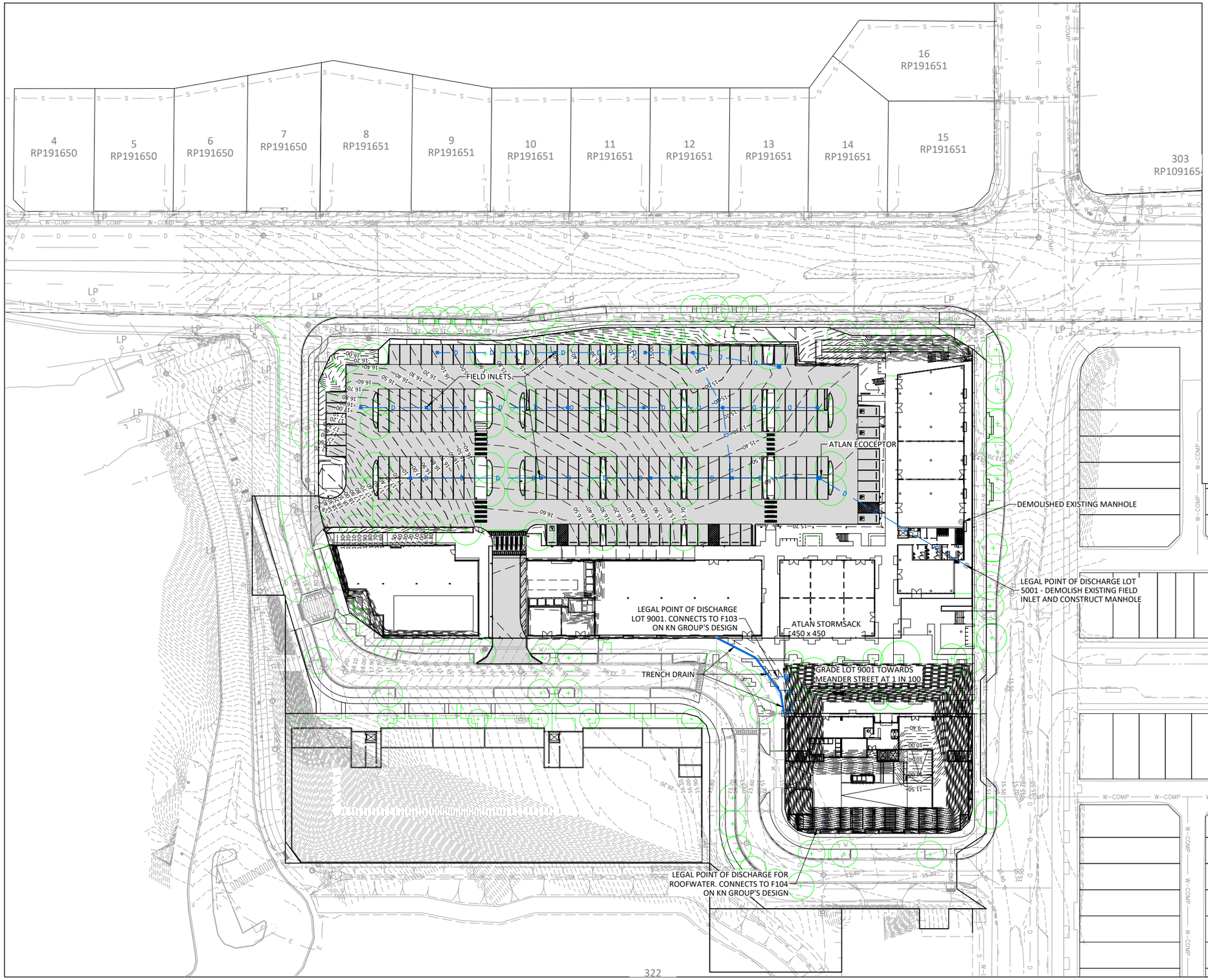

PLAN
SCALE 1:500

STORMWATER

EXISTING	PROPOSED	
	1.2	CATCHMENT NUMBER
		CATCHMENT BOUNDARY
		OPEN CHANNEL
RW RW	RW RW	ROOFWATER DRAINAGE
		STORMWATER DRAINAGE
D—COMP		STORMWATER DRAINAGE (FROM RECORDS)
		DIRECTION OF FLOW

SEWERAGE

EXISTING	PROPOSED	
S	S	SEWERAGE
COMP—S		SEWERAGE (FROM RECORDS)
	S	SEWERAGE PROPERTY CONNECTION
RM	RM	SEWERAGE RISING MAIN

WATER

EXISTING	PROPOSED	
W	W	WATER
W—COMP		WATER (FROM RECORDS)

LANDSCAPING (BY OTHERS)

NOTE

ROOFWATER DRAINAGE FROM LOT 5001 IS TO CONNECT TO INTERNAL STORMWATER DRAINAGE PRIOR TO ATLAN ECOCEPTOR

THIS DRAWING IS BEST VIEWED IN COLOUR AND ON AN ELECTRONIC DEVICE

PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES — A1 UNREDUCED, A3 REDUCED

SCALES — UNREDUCED / REDUCED

0 5 10 15 20 25 m
1: 500 / 1: 1000

STATUS

DEVELOPMENT APPLICATION

SCAN QR CODE TO CONFIRM CURRENT DRAWING REVISION
http://docs.bornhorstward.com.au/revision/

REV	DATE	DESCRIPTION	DWN	DES	CHK	APP
E	27.09.24	UPDATED LOT 5003 BASEMENT EXCAVATION	SG	SG	RG	
D	31.05.24	MINOR AMENDMENTS	ETA	ETA		
C	17.04.24	UPDATED BASEMENT & RETAINING WALLS	ETA	ETA	RG	
B	10.04.24	FOR COORDINATION	ETA	ETA		
A	08.03.24	FURTHER ISSUES RESPONSE	ETA	ETA		

ASSOCIATED CONSULTANTS

APPROVED — RPEQ — DATE

CHECKED — DATE

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CLIENT: DE LUCA CORPORATION PTY LTD

PROJECT: CARSELDINE VILLAGE

SUBJECT: SITEWORKS AND DRAINAGE LAYOUT

PROJECT No. 23019

DRAWING No. DA-C030

REVISION E

0 10 20 30 40 50 100

ORIGINAL SIZE A1

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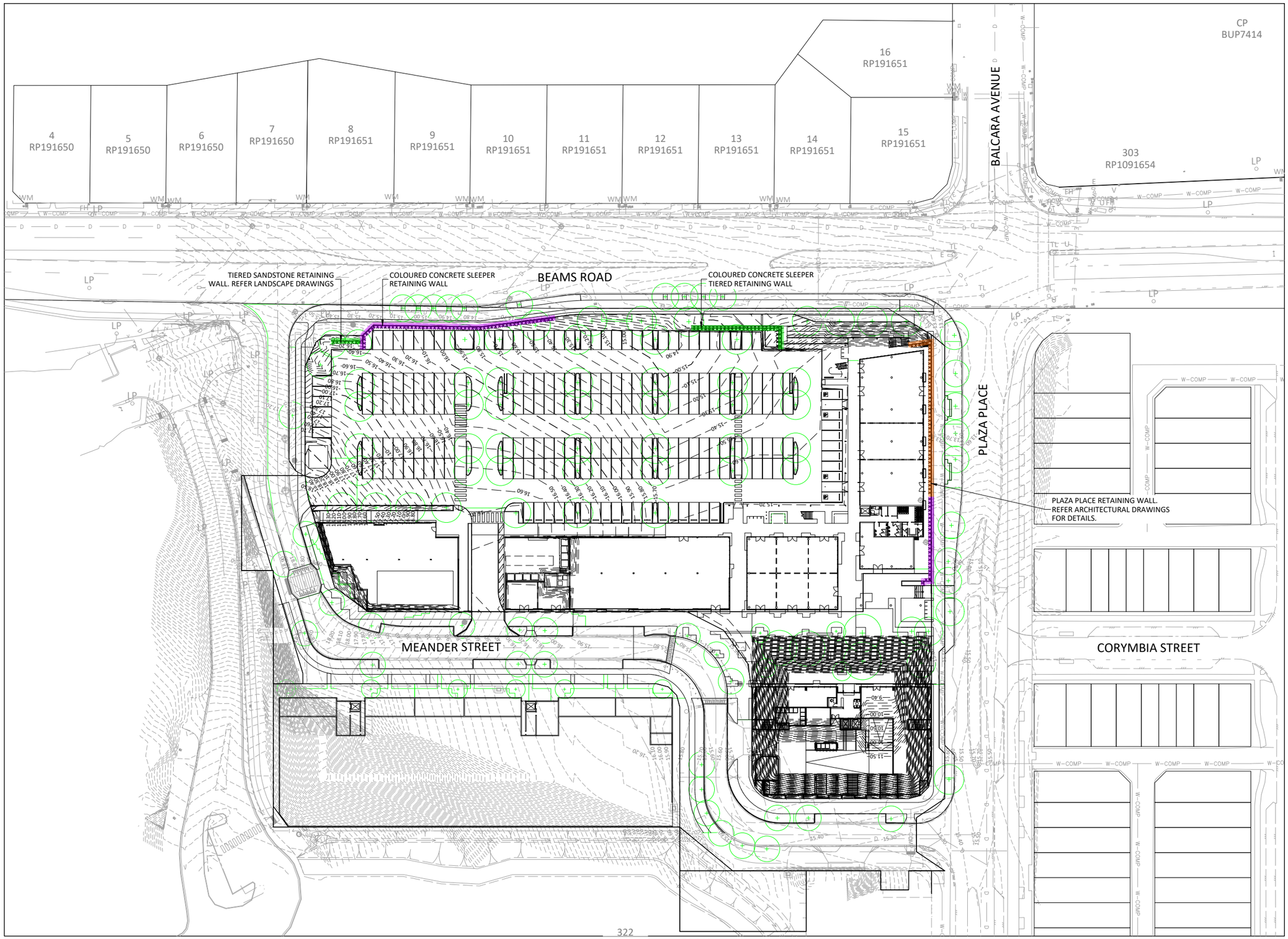

PLAN
SCALE 1:500

RETAINING WALL LEGEND

1 TIER WALL
LESS THAN 1.0m

1 TIER WALL
BETWEEN 1.0m TO 2.0m

2 TIER WALL
BETWEEN 1.0m TO 2.0m

NOTE

- RETAINING SYSTEM TO BE AS PER LANDSCAPE ARCHITECT DETAIL.

LANDSCAPING (BY OTHERS)

THIS DRAWING IS BEST VIEWED IN COLOUR AND ON AN ELECTRONIC DEVICE

PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES — A1 UNREDUCED, A3 REDUCED

SCALES — UNREDUCED / REDUCED

0 5 10 15 20 25 m
1: 500 / 1: 1000

STATUS

DEVELOPMENT APPLICATION

SCAN QR CODE TO CONFIRM CURRENT DRAWING REVISION
http://docs.bornhorstward.com.au/revision/

REV	DATE	DESCRIPTION	DWN	DES	CHK	APP
F	27.09.24	UPDATED LOT 5003 BASEMENT EXCAVATION	SG	SG	RG	
E	31.05.24	MINOR AMENDMENTS	ETA	ETA		
D	17.04.24	UPDATED BASEMENT & RETAINING WALLS	ETA	ETA	RG	
C	10.04.24	FOR COORDINATION	ETA	ETA		
B	08.03.24	FURTHER ISSUES RESPONSE	ETA	ETA		

ASSOCIATED CONSULTANTS

APPROVED
RPEQ
DATE

CHECKED
DATE

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CLIENT: DE LUCA CORPORATION PTY LTD

PROJECT: CARSELDINE VILLAGE

SUBJECT: RETAINING WALL LAYOUT

PROJECT No.: 23019

DRAWING No.: DA-C070

REVISION: F

0 10 20 30 40 50 100
ORIGINAL SIZE A1

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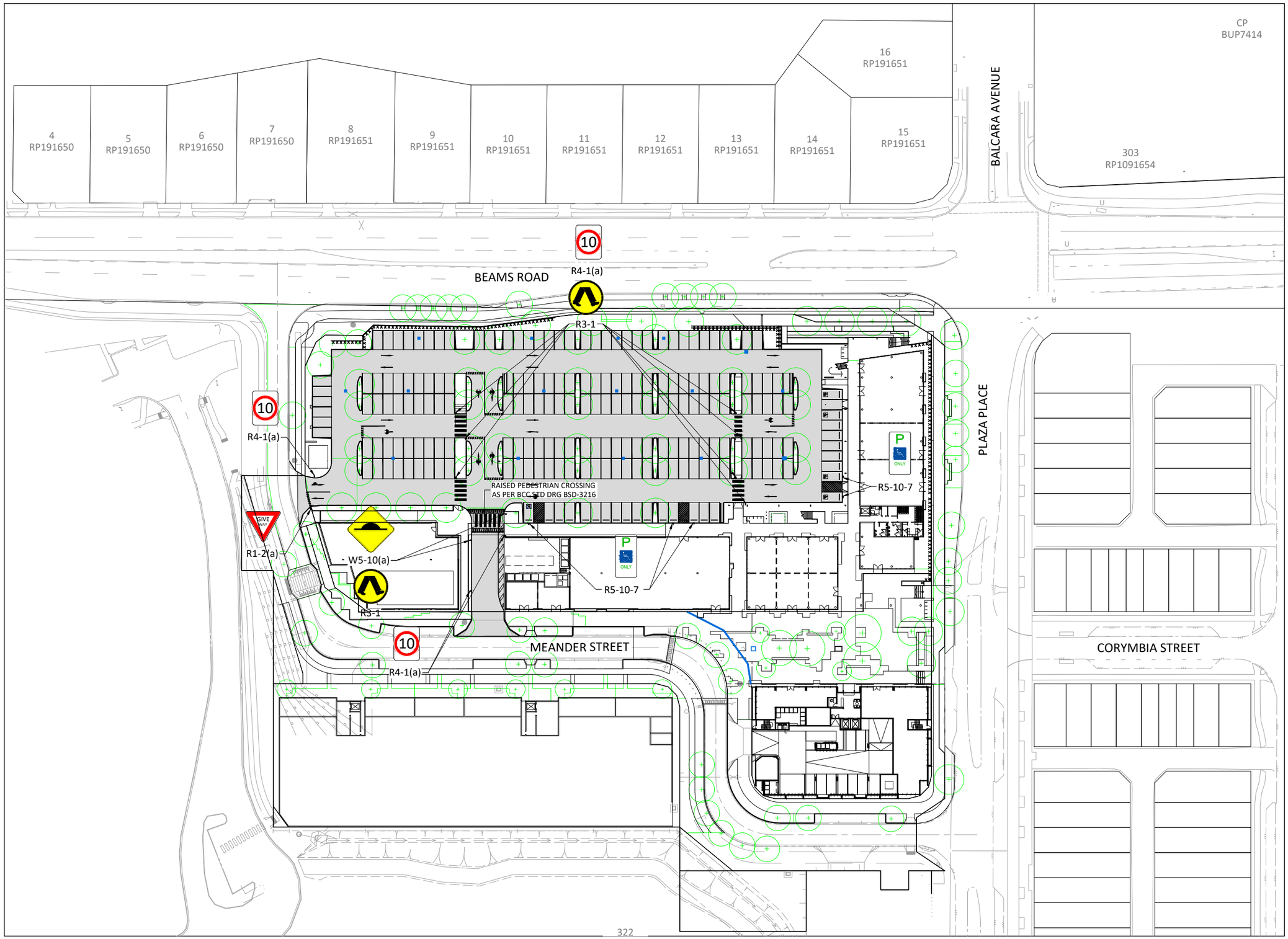

PLAN
SCALE 1:500

LANDSCAPING (BY OTHERS)

THIS DRAWING IS BEST VIEWED IN COLOUR AND ON AN ELECTRONIC DEVICE

PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES

A1 UNREDUCED
A3 REDUCED

SCALES

UNREDUCED / REDUCED

0 5 10 15 20 25 m

1: 500 / 1: 1000

STATUS

DEVELOPMENT APPLICATION

SCAN QR CODE TO CONFIRM CURRENT DRAWING REVISION
http://docs.bornhorstward.com.au/revision/

REV	DATE	DESCRIPTION	DWN	DES	CHK	APP
E	27.09.24	UPDATED LOT 5003 BASEMENT EXCAVATION	SG	SG	RG	
D	31.05.24	MINOR AMENDMENTS	ETA	ETA		
C	17.04.24	UPDATED BASEMENT & RETAINING WALLS	ETA	ETA	RG	
B	10.04.24	FOR COORDINATION	ETA	ETA		
A	08.03.24	FURTHER ISSUES RESPONSE	ETA	ETA		

ASSOCIATED CONSULTANTS

APPROVED
7729 RPEQ
DATE

CHECKED
DATE

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CLIENT
DE LUCA CORPORATION PTY LTD

PROJECT
CARSELDINE VILLAGE

SUBJECT
SIGNS AND LINEMARKING LAYOUT

PROJECT No.
23019

DRAWING No.
DA-C080

REVISION
E

0 10 20 30 40 50 100

ORIGINAL SIZE A1

J:\2023\23019\05_DRAWINGS\DWG\DA\DWG\DA-C080.DWG
27/09/2024 9:03:00 AM

APPENDIX C

EXISTING SITE INFORMATION

CARSELDINE VILLAGE

STAGE V

PLAN
SCALE 1:2000

DRAWING INDEX

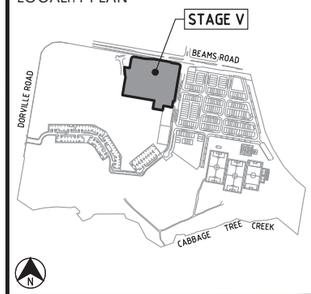
DRAWING NO.	DRAWING TITLE
21-121-01	GENERAL - LOCALITY PLAN, DRAWING INDEX AND NOTES
21-121-02	GENERAL - SETOUT PLAN
21-121-03	GENERAL - LAYOUT PLAN
21-121-04	EARTHWORKS - SPOT LEVELS PLAN
21-121-05	EARTHWORKS - GENERAL ARRANGEMENT - TIER RETAINING WALLS
21-121-06	EARTHWORKS - TIER RETAINING WALLS - SECTION AND DETAIL
21-121-07	ROADWORKS - LONGITUDINAL SECTION - MEANDER STREET
21-121-08	ROADWORKS - CROSS SECTIONS - MEANDER STREET
21-121-09	ROADWORKS - INTERSECTION DETAILS - SHEET 1
21-121-10	ROADWORKS - INTERSECTION DETAILS - SHEET 2
21-121-11	ROADWORKS - INTERSECTION DETAILS - SHEET 3
21-121-12	ROADWORKS - SIGNS AND LINEMARKING PLAN
21-121-13	STORMWATER - CATCHMENT PLAN
21-121-14	STORMWATER - CALCULATION TABLE - SHEET 1
21-121-15	STORMWATER - CALCULATION TABLE - SHEET 2
21-121-16	STORMWATER - LONGITUDINAL SECTIONS - SHEET 1
21-121-17	STORMWATER - LONGITUDINAL SECTIONS - SHEET 2
21-121-18	STORMWATER - MANHOLE DETAILS - SHEET 1
21-121-19	STORMWATER - MANHOLE DETAILS - SHEET 2
21-121-20	SAFETY IN DESIGN

SCALE 20 10 0 20 40 60 80 100 120 140 160 180 200m
1 : 2000 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

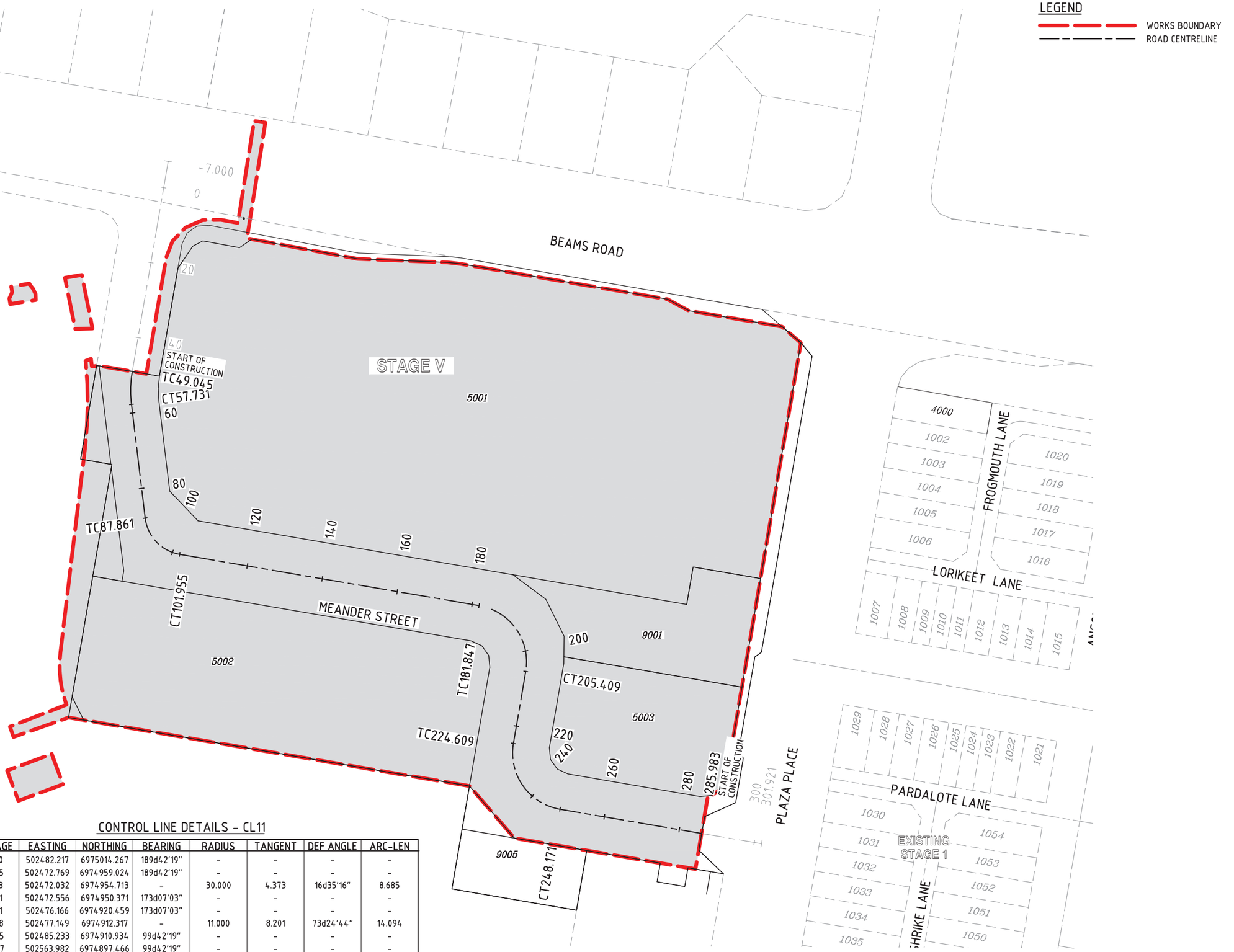
Approved
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:35+10'00'

Drawing Title
GENERAL
LOCALITY PLAN,
DRAWING INDEX AND NOTES

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	01 of 20

	Drawing No	Revision
A1	21-121- 01	A



CONTROL LINE DETAILS - CL11

PT	CHAINAGE	EASTING	NORTHING	BEARING	RADIUS	TANGENT	DEF ANGLE	ARC-LEN
IP1	-7.000	502482.217	6975014.267	189d42'19"	-	-	-	-
TC	49.045	502472.769	6974959.024	189d42'19"	-	-	-	-
IP2	53.388	502472.032	6974954.713	-	30.000	4.373	16d35'16"	8.685
CT	57.731	502472.556	6974950.371	173d07'03"	-	-	-	-
TC	87.861	502476.166	6974920.459	173d07'03"	-	-	-	-
IP3	94.908	502477.149	6974912.317	-	11.000	8.201	73d24'44"	14.094
CT	101.955	502485.233	6974910.934	99d42'19"	-	-	-	-
TC	181.847	502563.982	6974897.466	99d42'19"	-	-	-	-
IP4	193.628	502578.767	6974894.937	-	15.000	15.000	90d00'00"	23.562
CT	205.409	502576.238	6974880.152	189d42'19"	-	-	-	-
TC	224.609	502573.002	6974861.227	189d42'19"	-	-	-	-
IP5	236.390	502570.473	6974846.441	-	15.000	15.000	89d59'60"	23.562
CT	248.171	502585.258	6974843.912	99d42'19"	-	-	-	-
IP6	301.921	502638.239	6974834.851	99d42'19"	-	-	-	-

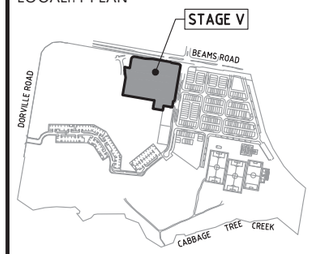
SETOUT PLAN
SCALE 1:500

SCALE
10 5 0 10 20 30 40 50m
1 : 500 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved
M. Shaw
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:35+10'00'

Drawing Title
GENERAL SETOUT PLAN

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	02 of 20

	Drawing No	Revision
A1	21-121-02	A

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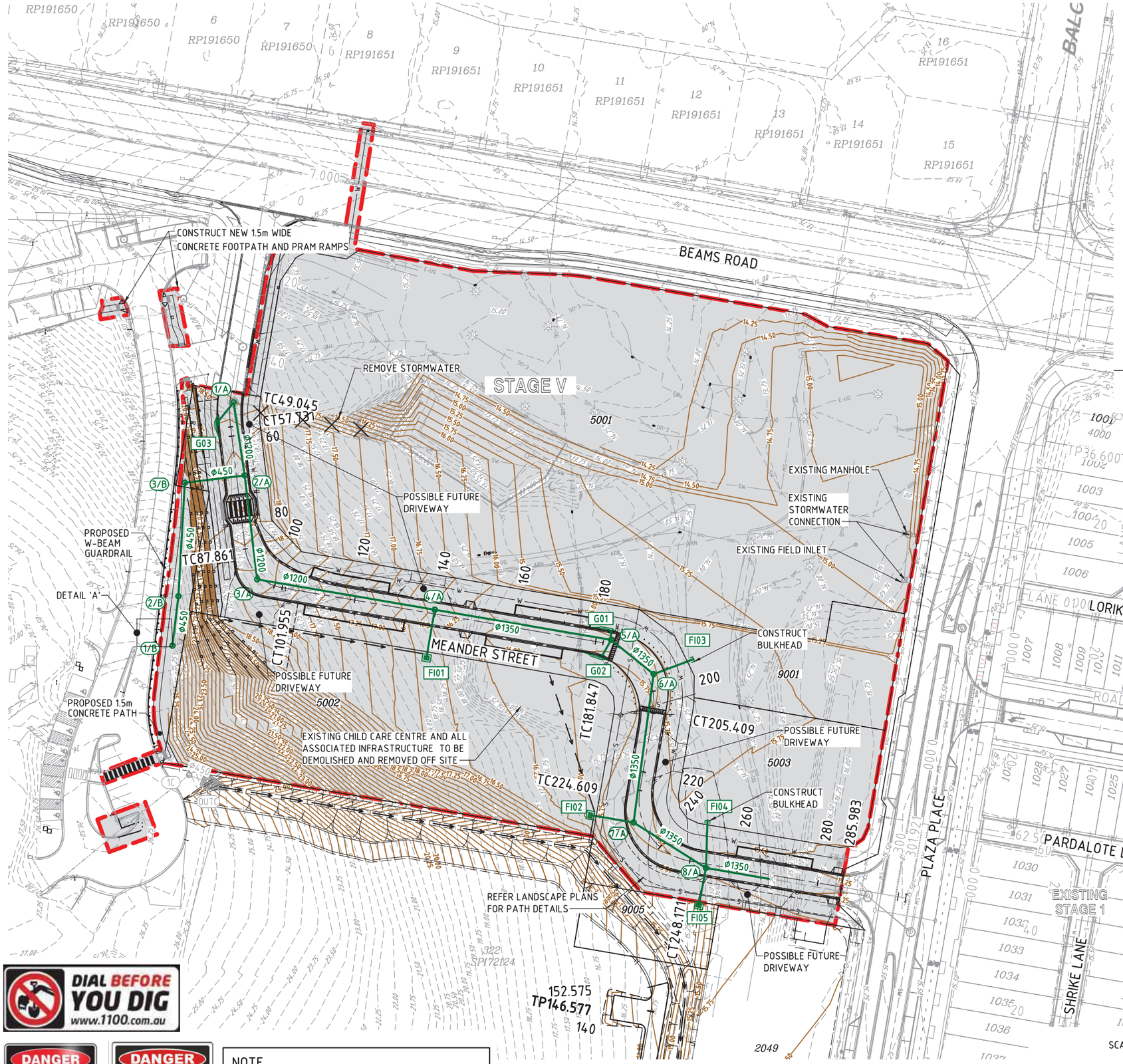
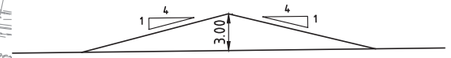
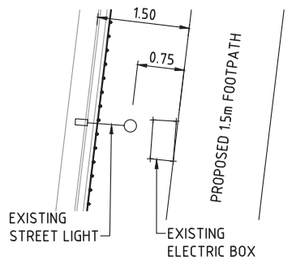


LEGEND

- WORKS BOUNDARY
- ROAD CENTRELINE
- KERB AND CHANNEL - TYPE E
- KERB ONLY - TYPE E
- INVERT CHANNEL
- MOUNTABLE KERB WITH BACKING STRIP
- PROPOSED RETAINING WALL
- PROPOSED W-BEAM GUARDRAIL
- STORMWATER DRAINAGE
- SEWER MAIN
- WATER MAIN
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- BATTER LINE
- TURF BUND 300mm HIGHT
- 17N STORMWATER MANHOLE/NUMBER
- G706 STORMWATER GULLY PIT/NUMBER
- R703 ROOFWATER FIELD INLET/NUMBER



BUND DETAIL
NTS.



DETAIL 'A'
SCALE 1:50

LAYOUT PLAN
SCALE 1:500

SCALE 1.0 0.5 0 1.0 2.0 3.0 4.0 5.0m
1 : 50 (A1 UNREDUCED)

SCALE 10 5 0 10 20 30 40 50m
1 : 500 (A1 UNREDUCED)

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DANGER UNDERGROUND CABLES

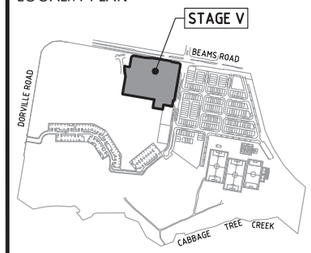
DANGER LIVE WIRES AND COMMUNICATION SERVICES

NOTE
PROPOSED WORKS ARE NEAR EXISTING SERVICES. CONTRACTOR TO COMPLETE DBYD AND LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION.

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved
M. Shaw
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:35+10'00'

Drawing Title
GENERAL LAYOUT PLAN

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	03 of 20

	Drawing No	Revision
A1	21-121-03	A

M:\2021\21121 Carseldine Village Stage V\Engineering\ACAD\21-121-03-GE-LAYOUT.dwg Plotted by: RW on 30/10/2023 3:45:07 PM

LEGEND

- WORKS BOUNDARY
- ROAD CENTRELINE
- KERB AND CHANNEL - TYPE E
- KERB ONLY - TYPE E
- INVERT CHANNEL
- MOUNTABLE KERB WITH BACKING STRIP
- FINISHED SURFACE CONTOURS (36.0)
- EXISTING SURFACE CONTOURS (36.0)
- BATTER LINE
- EXTENT OF CUT
- EXTENT OF FILL

EARTHWORKS SPOT LEVELS PLAN

SCALE 1:500

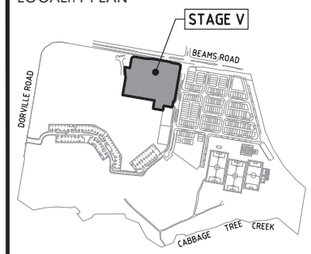
SCALE 5 0 5 10 15 20 25m
1 : 250 (A1 UNREDUCED)

SCALE 10 5 0 10 20 30 40 50m
1 : 500 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved
M. Shaw
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:36+10'00'

Drawing Title
EARTHWORKS SPOT LEVELS PLAN

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	04 of 20

	Drawing No	Revision
A1	21-121-04	A

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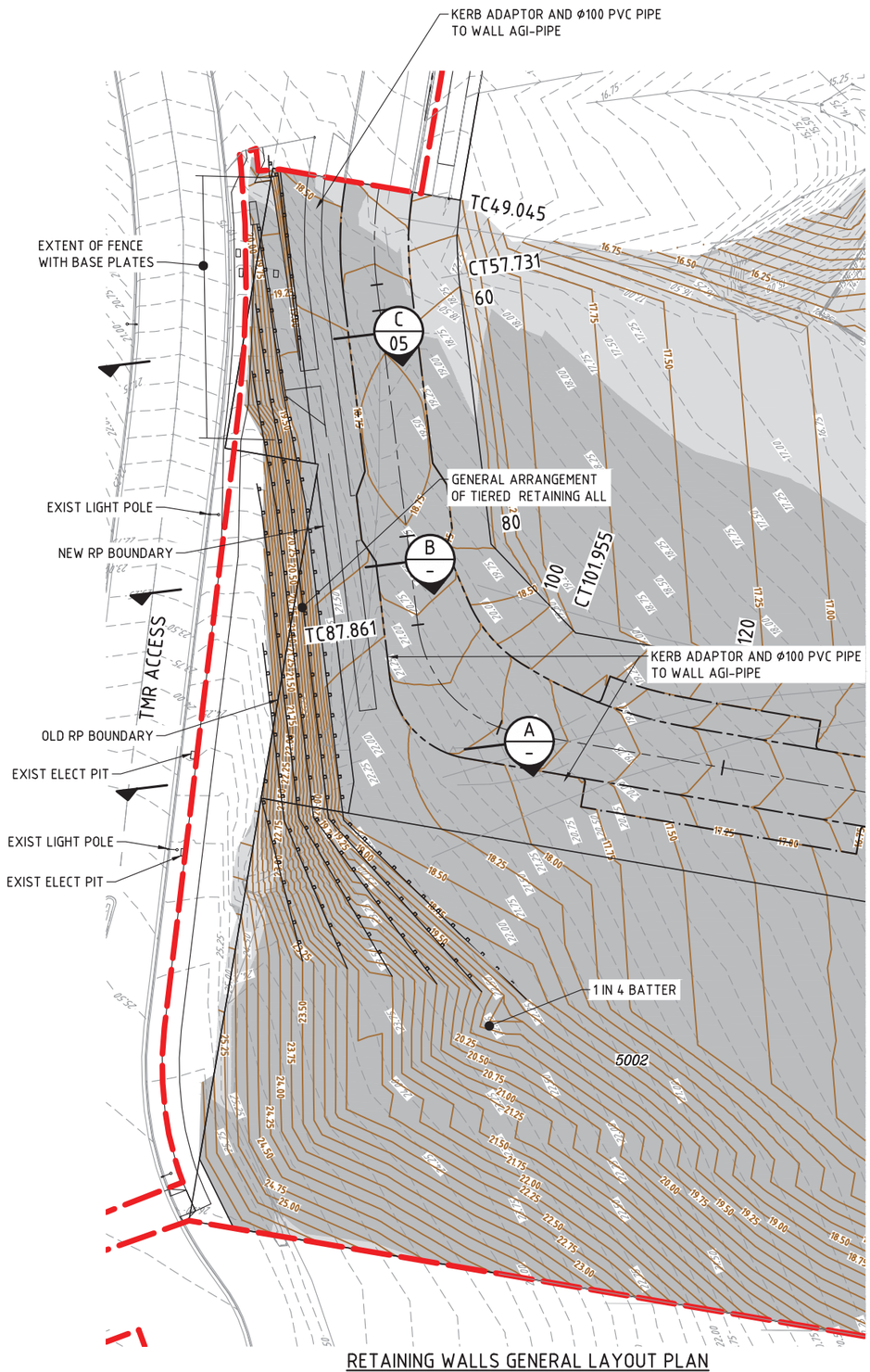
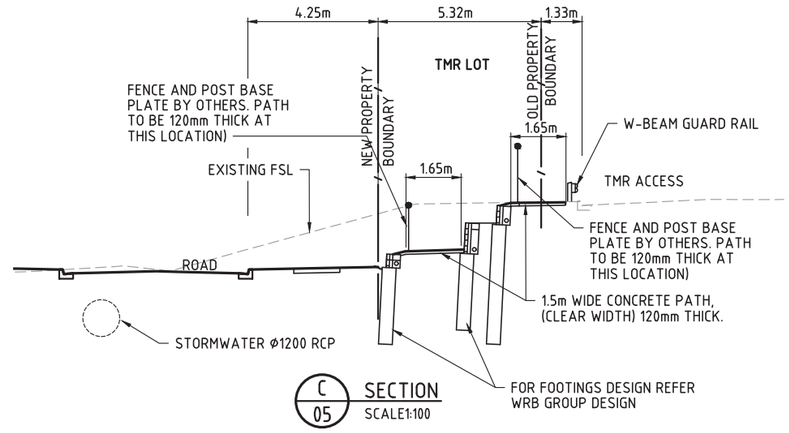


RETAINING WALLS GENERAL LAYOUT PLAN
SCALE 1:250



C 05 SECTION
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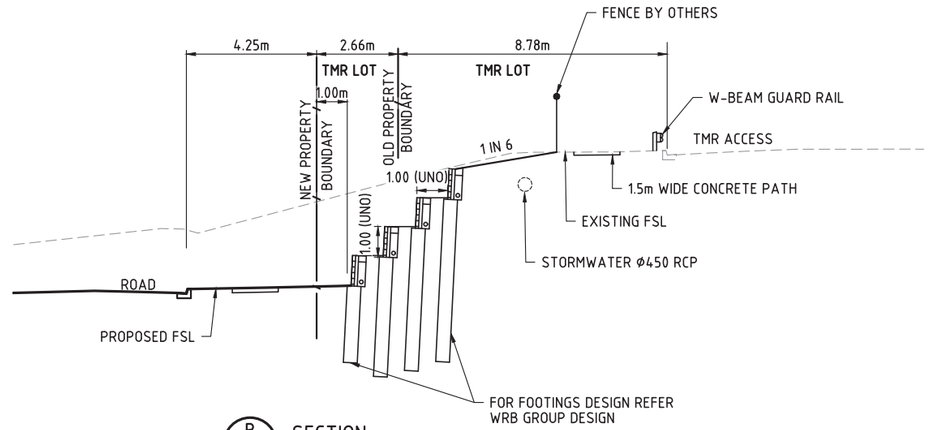
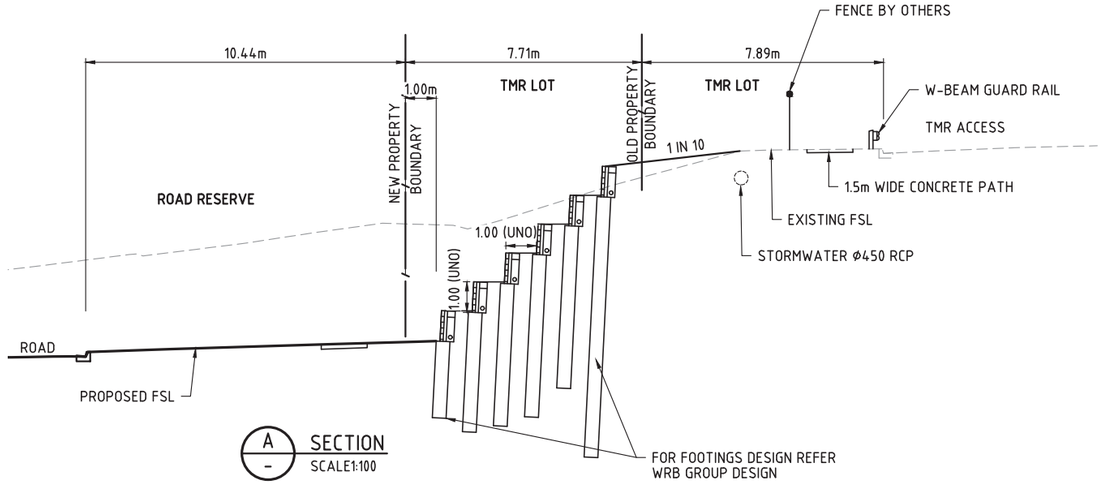


B - SECTION
SCALE1:100



A - SECTION
SCALE1:100

SCALE
1 0.5 0 1 2 3 4 5 6 7 8 9 10m
1 : 100 (A1 UNREDUCED)

SCALE
5 0 5 10 15 20 25m
1 : 250 (A1 UNREDUCED)

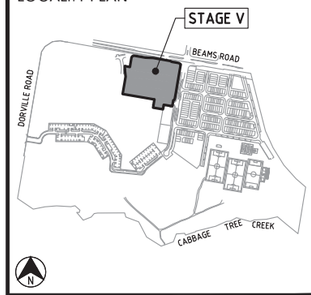
LEGEND

- WORKS BOUNDARY
- ROAD CENTRELINE
- KERB AND CHANNEL - TYPE E
- KERB ONLY - TYPE E
- INVERT CHANNEL
- 36.0 FINISHED SURFACE CONTOURS
- 36.0 EXISTING SURFACE CONTOURS
- BATTER LINE
- EXTENT OF CUT
- EXTENT OF FILL

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved
M. Shaw
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:36+10'00'

Drawing Title
EARTHWORKS GENERAL ARRANGEMENT TIER RETAINING WALLS

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	05 of 20

	Drawing No	Revision
A1	21-121-05	A

M:\2021\21121 Carseldine Village Stage V\Engineering\ACAD\21-121-04-06-EW-SPOT.dwg Plotted by: RW on 30/10/2023 3:45:28 PM

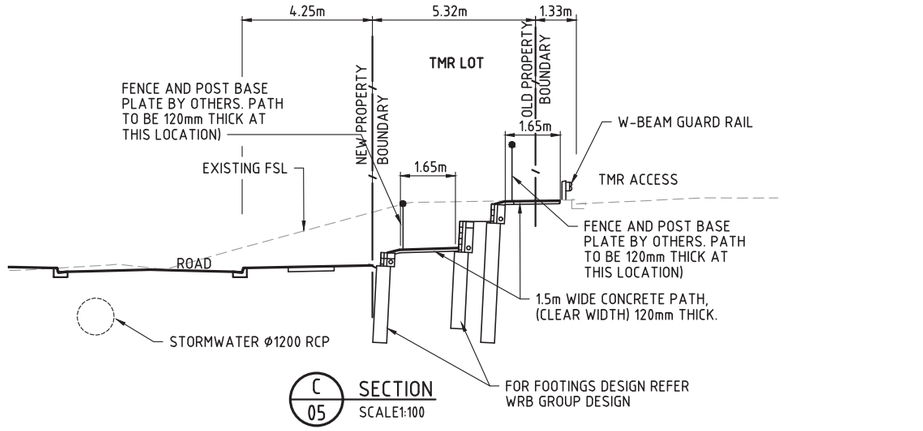
PATH DETAIL
SCALE 1:50

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
1	502468.005	6974938.003	18.939
2	502467.588	6974941.462	18.904
3	502467.408	6974942.951	18.878
4	502464.538	6974940.590	18.989
5	502464.462	6974941.084	18.982
6	502465.872	6974942.765	18.917
7	502464.233	6974942.568	18.958
8	502465.567	6974944.742	19.012
9	502463.928	6974944.545	19.012
10	502463.844	6974955.917	19.550
11	502462.205	6974955.719	19.550
12	502463.539	6974957.895	19.590
13	502461.900	6974957.697	19.631
14	502461.325	6974957.628	19.645
15	502463.287	6974959.526	19.540
16	502461.280	6974959.284	19.480

LEGEND

- WORKS BOUNDARY
- ROAD CENTRELINE
- KERB AND CHANNEL - TYPE E
- KERB ONLY - TYPE E
- INVERT CHANNEL
- 36.0 FINISHED SURFACE CONTOURS
- 36.0 EXISTING SURFACE CONTOURS
- BATTER LINE
- EXTENT OF CUT
- EXTENT OF FILL



C/05 SECTION
SCALE1:100

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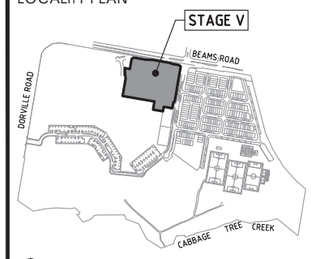
SCALE 1 0.5 0 1 2 3 4 5 6 7 8 9 10m
1 : 100 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

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Drawing Title
EARTHWORKS
TIER RETAINING WALLS
SECTION AND DETAIL

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	06 of 20

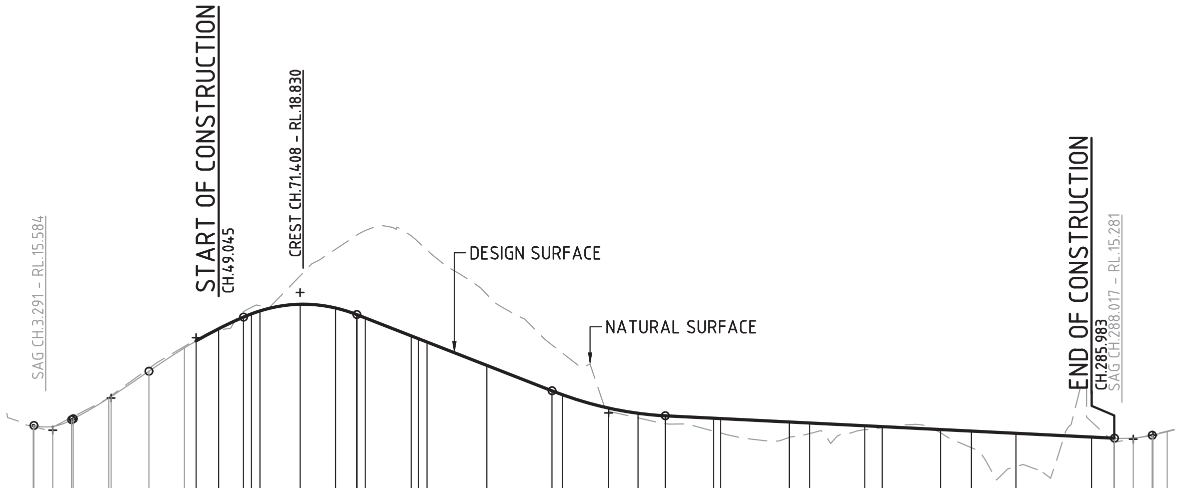
	Drawing No	Revision
A1	21-121-06	A

M:\2021\21121 Carseldine Village Stage V\Engineering\ACAD\21-121-04-06-EW-SPOT.dwg Plotted by: RW on 30/10/2023 3:45:32 PM

NOMINAL PAVEMENT DETAILS

LOCAL ACCESS

50mm ASPHALTIC CONCRETE
100mm BASE COURSE (TYPE 2.1, CBR 80)
150mm UPPER SUB-BASE COURSE (TYPE 2.3, CBR 45)
SUBGRADE REPLACEMENT AS REQUIRED (TYPE 2.4, CBR 15)
DESIGN ESA = 3.7×10^5



\# REFER TO INTERSECTION DETAILS ON KN DWG 21-121-09 FOR ROAD CENTRELINE CROWN SHIFT LEVELS

* REFER INTERSECTION DETAILS ON KN DWG 21-121-09 AND 10

Stage Number	EXISTING STAGE ???	PROPOSED STAGE 0V	EXISTING STAGE ???

Vertical Geometry Grade / Length (m)	-2.500% / 5.166	5.500% / 15.441	7.100% / 22.500	4.340% / 27.500	-3.900% / 81.623	-0.500% / 138.788	2.000% / 5.204	2.500% / 5.700

Vertical Curve Length (m) / Radius (m)	VC.10 / R.125.001	VC.20 / R.1249.975	VC.25 / R.905.797	VC.30 / R.364.076	VC.30 / R.882.338	VC.10 / R.399.931

DATUM R.L.2.000

VOLUMES													
CUT	39	332	250	634	1351	867	262	0	0	3	0	79	22
FILL	15	4	0	0	0	46	152	9	103	9	187	198	1

PEGGED CHAINAGE	LIP OF KERB LHS	LIP OF KERB RHS	NATURAL SURFACE	CUT/FILL DEPTH	DESIGN SURFACE
-7.000			15.944		
0.000			15.595	0.032	15.627
0.166			15.591	0.032	15.623
5.166			15.577	0.021	15.598
10.166			15.836	-0.063	15.773
10.607			15.859	-0.062	15.797
20.000			* [illegible]	-0.019	16.349
20.607			16.411	-0.024	16.387
30.607			17.130	-0.072	17.057
40.000			17.711	-0.036	17.675
43.107			17.893	-0.035	17.858
49.045	18.079	18.284	18.149	0.030	18.179
55.607	18.412	18.474	18.636	-0.149	18.487
57.731	18.506	18.526	18.746	-0.173	18.573
60.000	18.584	18.584	18.790	-0.139	18.651
70.607	18.761	18.761	19.576	-0.747	18.829
80.000	*	18.638	20.284	-1.555	18.729
85.607	*	18.486	20.657	-2.103	18.553
85.624	*	18.485	20.658	-2.105	18.552
87.861	*	*	20.778	-2.313	#
100.000	*	*	20.643	-2.651	#
101.955	*	17.848	20.469	-2.553	#
104.191	*	17.761	20.261	-2.433	17.828
120.000	17.144	17.144	19.090	-1.878	17.212
137.230	16.472	16.472	17.756	-1.216	16.540
140.000	16.369	16.369	17.540	-1.104	16.436
152.230	16.015	16.015	15.999	0.083	16.082
160.000	15.878	15.878	15.824	0.122	15.946
167.230	15.812	15.812	15.668	0.211	15.880
180.000	15.748	*	15.475	0.341	15.816
181.847	*	*	15.424	0.382	15.807
200.000	*	*	15.307	0.409	15.716
205.409	15.621	*	15.409	0.280	15.689
220.000	15.548	15.548	15.514	0.101	15.616
224.609	*	*	15.565	0.028	15.593
240.000	*	*	15.434	0.082	15.516
248.171		15.408	15.037	0.439	15.475
260.000	15.348	15.348	14.539	0.877	15.416
280.000	15.248	15.248	15.720	-0.404	15.316
285.983	15.219	15.219	15.177	0.109	15.286
286.017	15.218	15.218	15.178	0.108	15.286
291.017			15.276	0.016	15.292
296.017			15.376	-0.015	15.361
296.221			15.381	-0.016	15.365
300.000			15.475	-0.016	15.459

Horiz Curve Data: R.-30 / 8.685; R.-11 / 14.094; R.15 / 23.562; R.-15 / 23.562

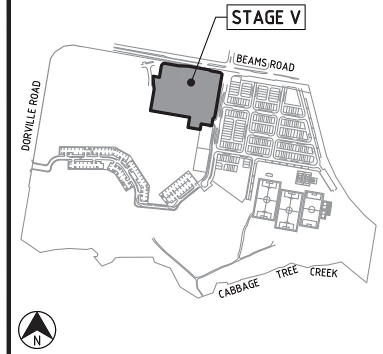
LONGITUDINAL SECTION - MEANDER STREET

SCALE - 1:500 (H)
1:100 (V)

SCALE A 1:1000 (Horiz.)
B 1:100 (Vert.)
(A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

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Approved
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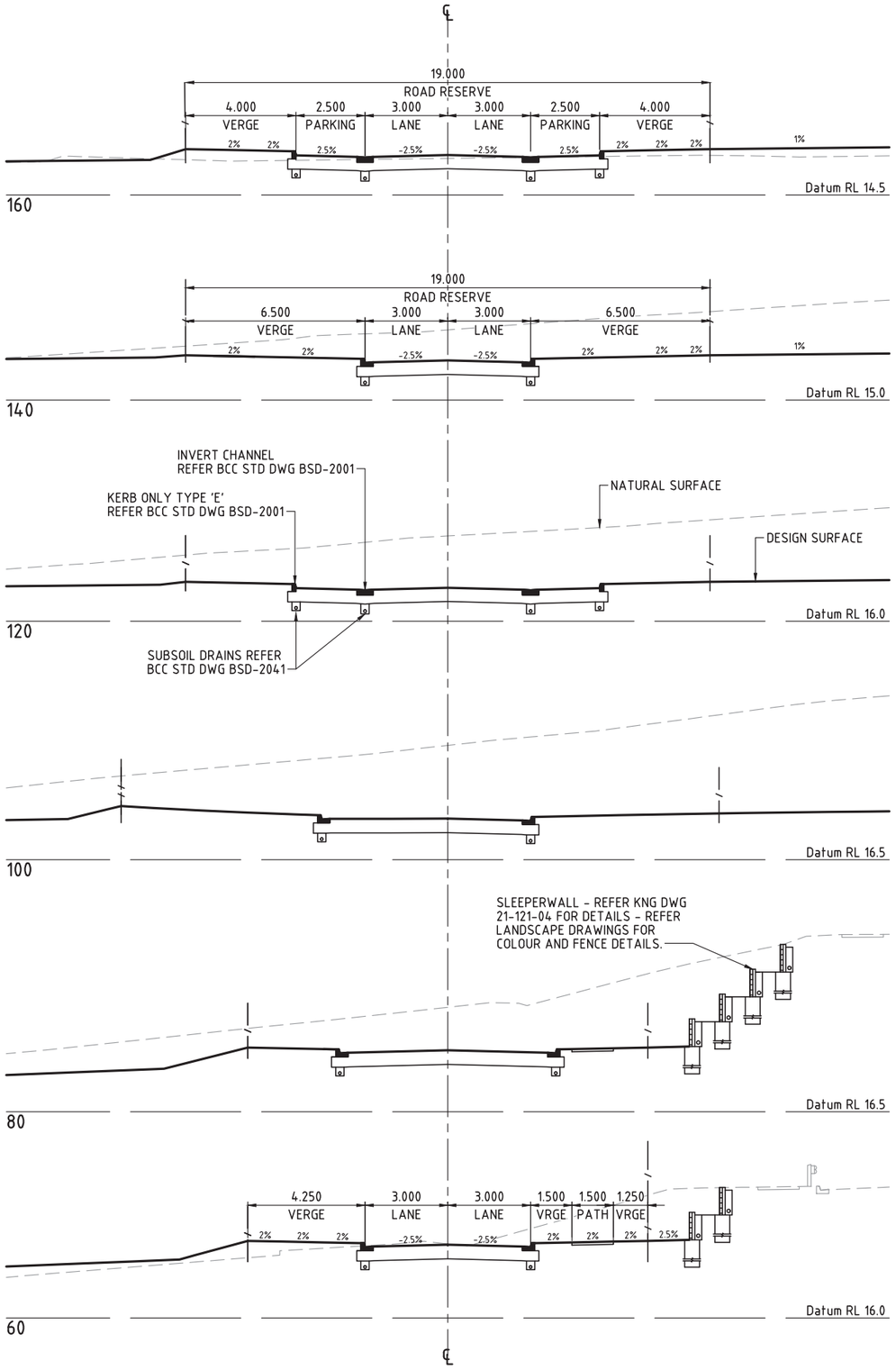
Date: 2023.11.02 07:36:37+10'00'

Drawing Title
ROADWORKS
LONGITUDINAL SECTION
MEANDER STREET

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale: AS SHOWN | Sheet: 07 of 20

A1 | Drawing No: 21-121-07 | Revision: A



CROSS SECTIONS - MEANDER STREET
SCALE 1:100

SCALE 1 0.5 0 1 2 3 4 5 6 7 8 9 10m
1 : 100 (A1 UNREDUCED)

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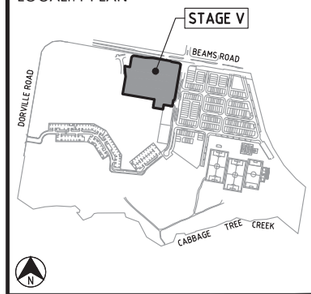
LOCALITY PLAN



REVISIONS

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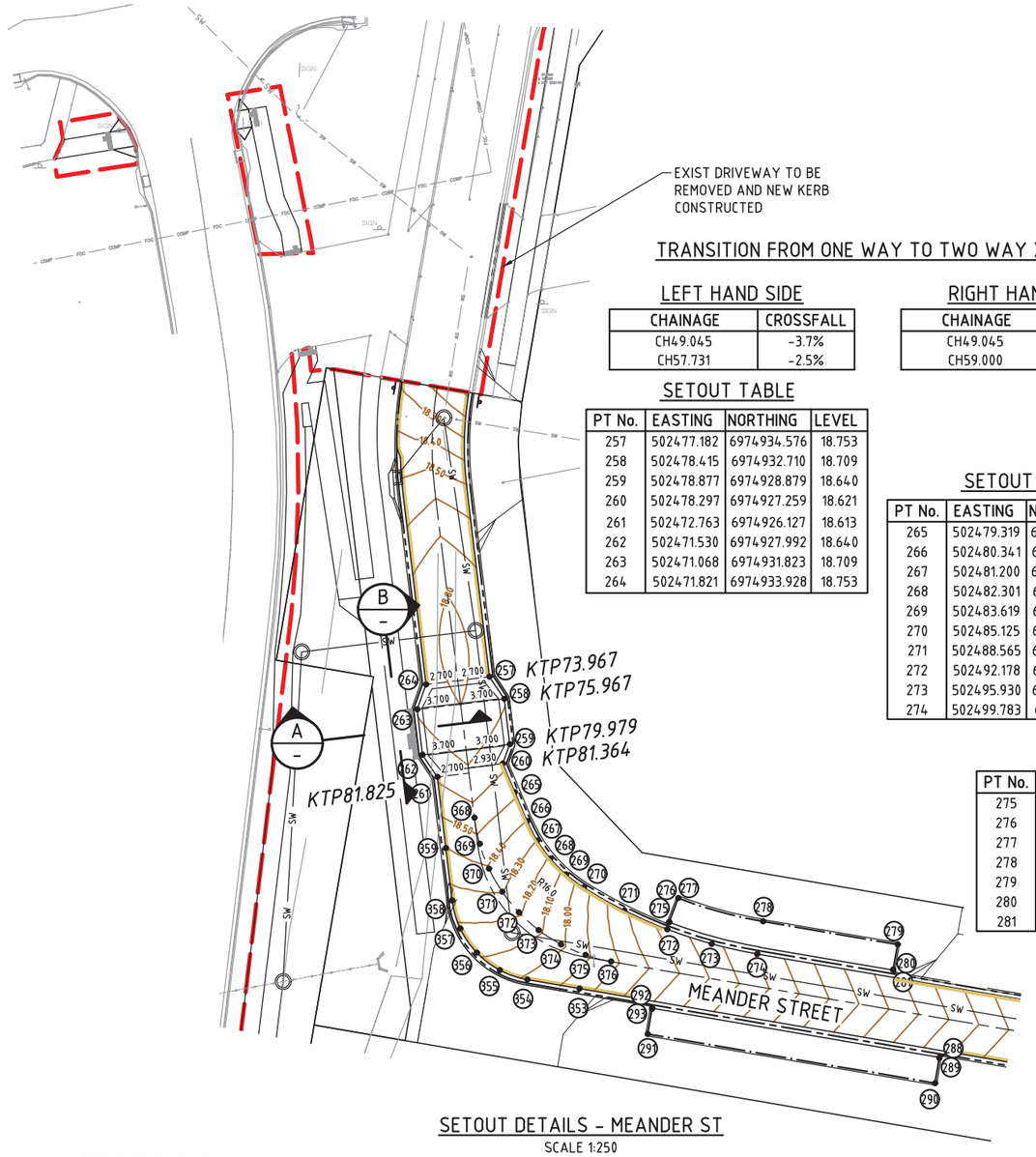
Drawing Title
ROADWORKS
CROSS SECTIONS
MEANDER STREET

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	08 of 20

A1	Drawing No	Revision
	21-121-08	A



SETOUT DETAILS - MEANDER ST
SCALE 1:250

TRANSITION FROM ONE WAY TO TWO WAY XFALL

LEFT HAND SIDE

CHAINAGE	CROSSFALL
CH49.045	-3.7%
CH57.731	-2.5%

RIGHT HAND SIDE

CHAINAGE	CROSSFALL
CH49.045	+3.5%
CH59.000	-2.5%

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
257	502477.182	6974934.576	18.753
258	502478.415	6974932.710	18.709
259	502478.877	6974928.879	18.640
260	502478.297	6974927.259	18.621
261	502472.763	6974926.127	18.613
262	502471.530	6974927.992	18.640
263	502471.068	6974931.823	18.709
264	502471.821	6974933.928	18.753

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
265	502479.319	6974924.839	18.518
266	502480.341	6974922.419	18.397
267	502481.200	6974920.754	18.297
268	502482.301	6974919.238	18.188
269	502483.619	6974917.907	18.068
270	502485.125	6974916.792	17.941
271	502488.565	6974914.857	17.716
272	502492.178	6974913.268	17.564
273	502495.930	6974912.040	17.435
274	502499.783	6974911.185	17.290

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
275	502492.329	6974913.853	17.566
276	502492.348	6974913.903	17.568
277	502493.105	6974915.911	17.621
278	502500.255	6974913.945	17.345
279	502511.614	6974912.002	16.896
280	502511.252	6974909.883	16.842
281	502511.243	6974909.834	16.841

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
368	502475.898	6974922.679	18.552
369	502476.344	6974920.484	18.471
370	502477.134	6974918.388	18.390
371	502478.248	6974916.445	18.304
372	502479.657	6974914.704	18.213
373	502481.326	6974913.211	18.117
374	502483.212	6974912.002	18.019
375	502485.267	6974911.110	17.921
376	502487.437	6974910.557	17.828

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
353	502484.778	6974908.273	17.848
354	502480.368	6974909.027	17.983
355	502478.045	6974909.822	18.050
356	502476.089	6974911.308	18.114
357	502474.701	6974913.334	18.182
358	502474.022	6974915.694	18.256
359	502473.486	6974920.135	18.398

SETOUT TABLE

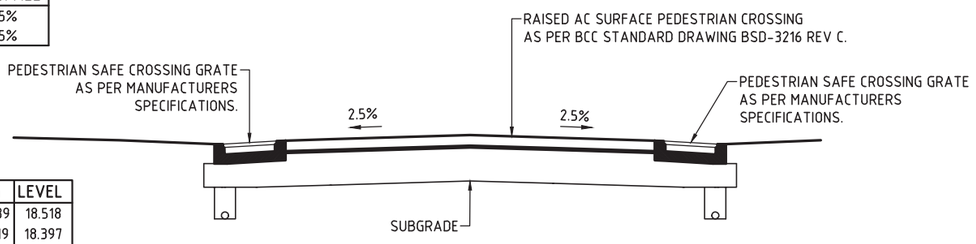
PT No.	EASTING	NORTHING	LEVEL
288	502515.152	6974902.469	16.640
289	502515.140	6974902.421	16.644
290	502514.777	6974900.301	16.697
291	502490.530	6974904.448	17.657
292	502490.892	6974906.568	17.603
293	502490.900	6974906.617	17.602

GENERAL NOTES

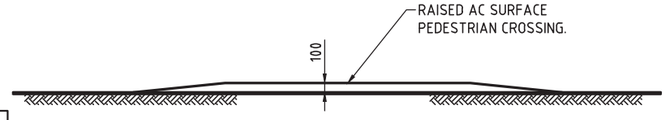
1. SETOUT TABLES ARE GIVEN AT KERB LIP LEVELS.
2. KERB LIP LEVELS ARE GIVEN AT QUARTER POINTS, TP'S AND EQUAL PARTS U.N.O.
3. KERB RADII AND OFFSETS ARE GIVEN AT NOMINAL KERB FACE .
4. EXTRA DETAIL FOR SETTING OUT IS AVAILABLE ON CAD FILE.
5. FOR KERB INFORMATION REFER TO B.C.C. STD DWG BSD-2001.
6. ALL KERB RAMPS WHERE RAMP FLATTER THAN 1:9 TO INCLUDE TACTILE INDICATORS.

LEGEND

- ROAD CENTRELINE
- BARRIER K&C (TYPE E)
- INVERT
- BARRIER KERB ONLY (TYPE E)
- NOMINAL FACE OF KERB
- TACTILE GROUND SURFACE INDICATORS (TGSI)

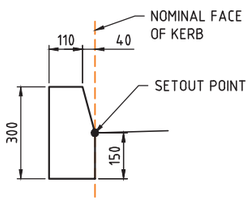


A/09 RAISED AC SURFACE PEDESTRIAN CROSSING
SCALE 1 : 50

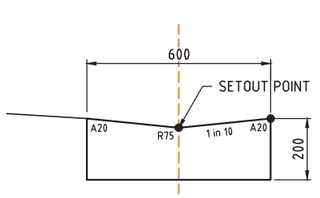


B/09 RAISED AC SURFACE PEDESTRIAN CROSSING
SCALE 1 : 50

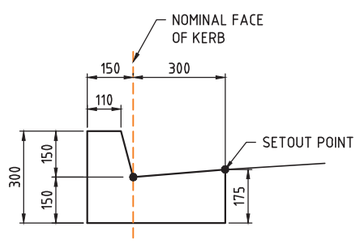
NB: TO BE READ IN CONJUNCTION WITH DTMR'S TRAFFIC AND ROAD USE MANAGEMENT MANUAL - USE OF ROAD HUMPS AS PEDESTRIAN CROSSINGS



KERB SETOUT DETAIL
BARRIER - STANDARD TYPE 'E'
SCALE 1:10



KERB SETOUT DETAIL
INVERT CHANNEL
SCALE 1:10



KERB SETOUT DETAIL
KERB AND CHANNEL - STANDARD TYPE 'E'
SCALE 1:10

SCALE 0.1 0.05 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0m
1 : 10 (A1 UNREDUCED)

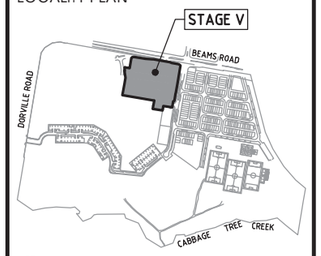
SCALE 1.0 0.5 0 1.0 2.0 3.0 4.0 5.0m
1 : 50 (A1 UNREDUCED)

SCALE 5 0 5 10 15 20 25m
1 : 250 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
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Approved
Mark Andrew Shaw BEng (Civil), MIEAust, RPEQ 17544
2023.11.02 08:49:01 +10'00'

Drawing Title
ROADWORKS INTERSECTION DETAILS SHEET 1

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	09 of 20

Drawing No	Revision
21-121-09	A

A1

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SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
282	502542.311	6974904.520	15.888
283	502542.319	6974904.569	15.889
284	502542.682	6974906.689	15.943
285	502561.015	6974903.553	15.814
286	502560.653	6974901.434	15.760
287	502560.644	6974901.384	15.759

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
334	502564.437	6974900.127	15.739
335	502567.345	6974899.630	15.721
336	502568.433	6974899.714	15.764
337	502573.540	6974897.405	15.745
338	502577.579	6974893.171	15.724
339	502579.597	6974888.207	15.705
340	502579.701	6974882.603	15.685
341	502579.398	6974880.829	15.679
342	502578.933	6974879.894	15.622
343	502578.900	6974879.697	15.621

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
294	502553.998	6974895.825	15.786
295	502553.986	6974895.777	15.788
296	502553.624	6974893.657	15.842
297	502534.995	6974896.844	16.045
298	502535.357	6974898.963	15.992
299	502535.362	6974899.013	15.990

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
344	502573.071	6974877.650	15.606
345	502573.277	6974880.861	15.614
346	502572.892	6974881.942	15.666
347	502572.149	6974885.183	15.688
348	502570.707	6974888.184	15.710
349	502568.644	6974890.788	15.732
350	502566.056	6974892.876	15.753
351	502565.277	6974893.682	15.711
352	502560.570	6974895.310	15.754

SETOUT TABLE

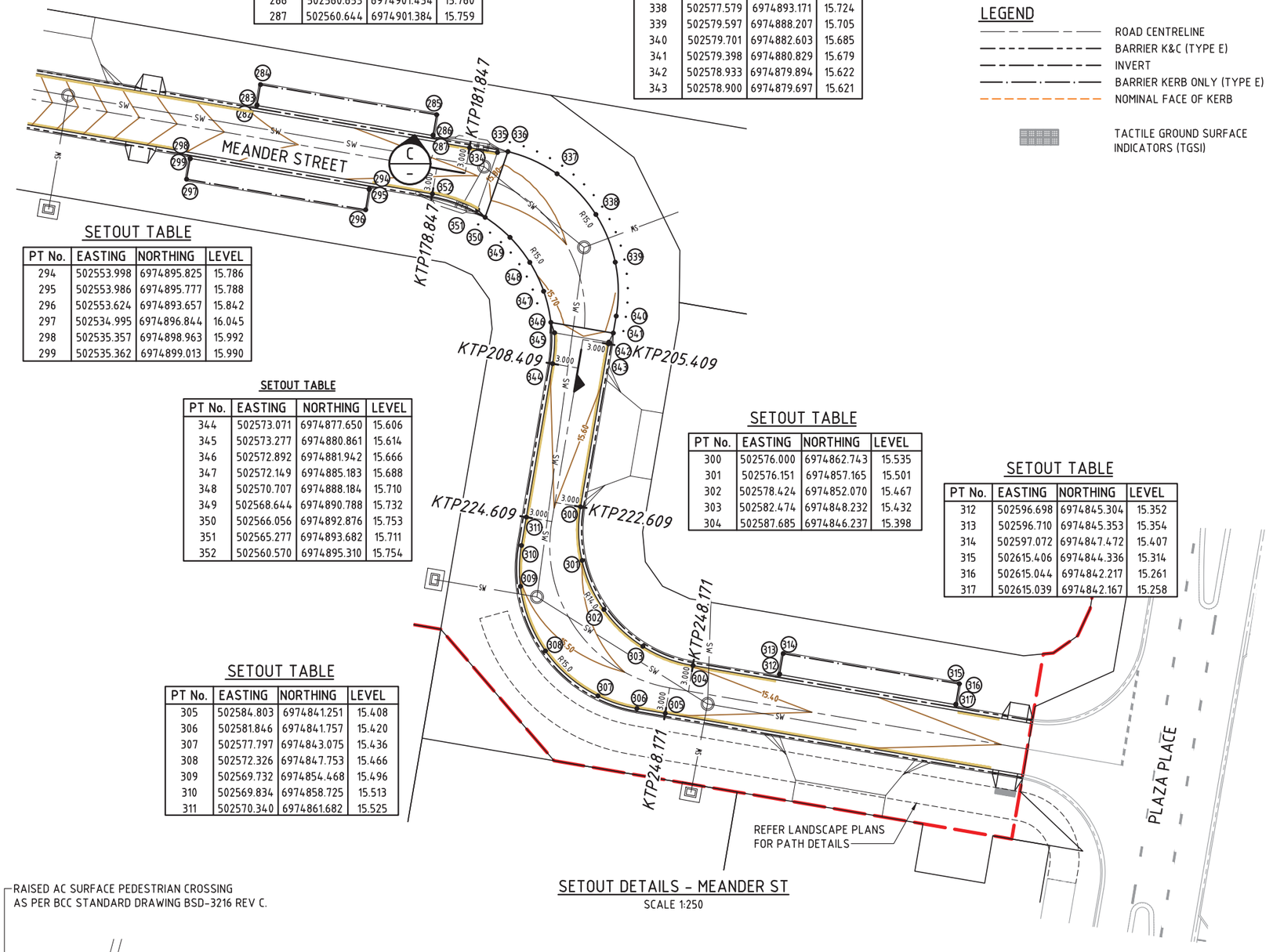
PT No.	EASTING	NORTHING	LEVEL
300	502576.000	6974862.743	15.535
301	502576.151	6974857.165	15.501
302	502578.424	6974852.070	15.467
303	502582.474	6974848.232	15.432
304	502587.685	6974846.237	15.398

SETOUT TABLE

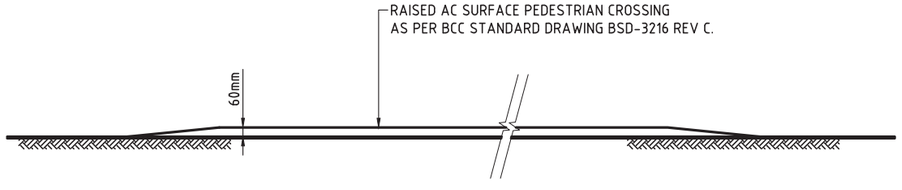
PT No.	EASTING	NORTHING	LEVEL
312	502596.698	6974845.304	15.352
313	502596.710	6974845.353	15.354
314	502597.072	6974847.472	15.407
315	502615.406	6974844.336	15.314
316	502615.044	6974842.217	15.261
317	502615.039	6974842.167	15.258

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
305	502584.803	6974841.251	15.408
306	502581.846	6974841.757	15.420
307	502577.797	6974843.075	15.436
308	502572.326	6974847.753	15.466
309	502569.732	6974854.468	15.496
310	502569.834	6974858.725	15.513
311	502570.340	6974861.682	15.525



SETOUT DETAILS - MEANDER ST
SCALE 1:250



C/10 RAISED AC SURFACE PEDESTRIAN CROSSING
SCALE 1 : 50

NB: TO BE READ IN CONJUNCTION WITH DTMR'S TRAFFIC AND ROAD USE MANAGEMENT MANUAL - USE OF ROAD HUMPS AS PEDESTRIAN CROSSINGS

SCALE
5 0 5 10 15 20 25m
1 : 250 (A1 UNREDUCED)

GENERAL NOTES

1. SETOUT TABLES ARE GIVEN AT KERB LIP LEVELS.
2. KERB LIP LEVELS ARE GIVEN AT QUARTER POINTS, TP'S AND EQUAL PARTS U.N.O.
3. KERB RADII AND OFFSETS ARE GIVEN AT NOMINAL KERB FACE .
4. EXTRA DETAIL FOR SETTING OUT IS AVAILABLE ON CAD FILE.
5. FOR KERB INFORMATION REFER TO B.C.C. STD DWG BSD-2001.
6. ALL KERB RAMPS WHERE RAMP FLATTER THAN 1:9 TO INCLUDE TACTILE INDICATORS.

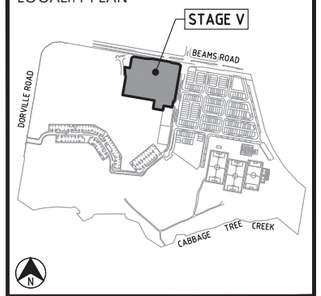
LEGEND

- ROAD CENTRELINE
- BARRIER K&C (TYPE E)
- INVERT
- BARRIER KERB ONLY (TYPE E)
- NOMINAL FACE OF KERB
- TACTILE GROUND SURFACE INDICATORS (TGSI)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:37+10'00'

Drawing Title
ROADWORKS INTERSECTION DETAILS SHEET 2

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	10 of 20

A1	Drawing No	Revision
	21-121-10	A

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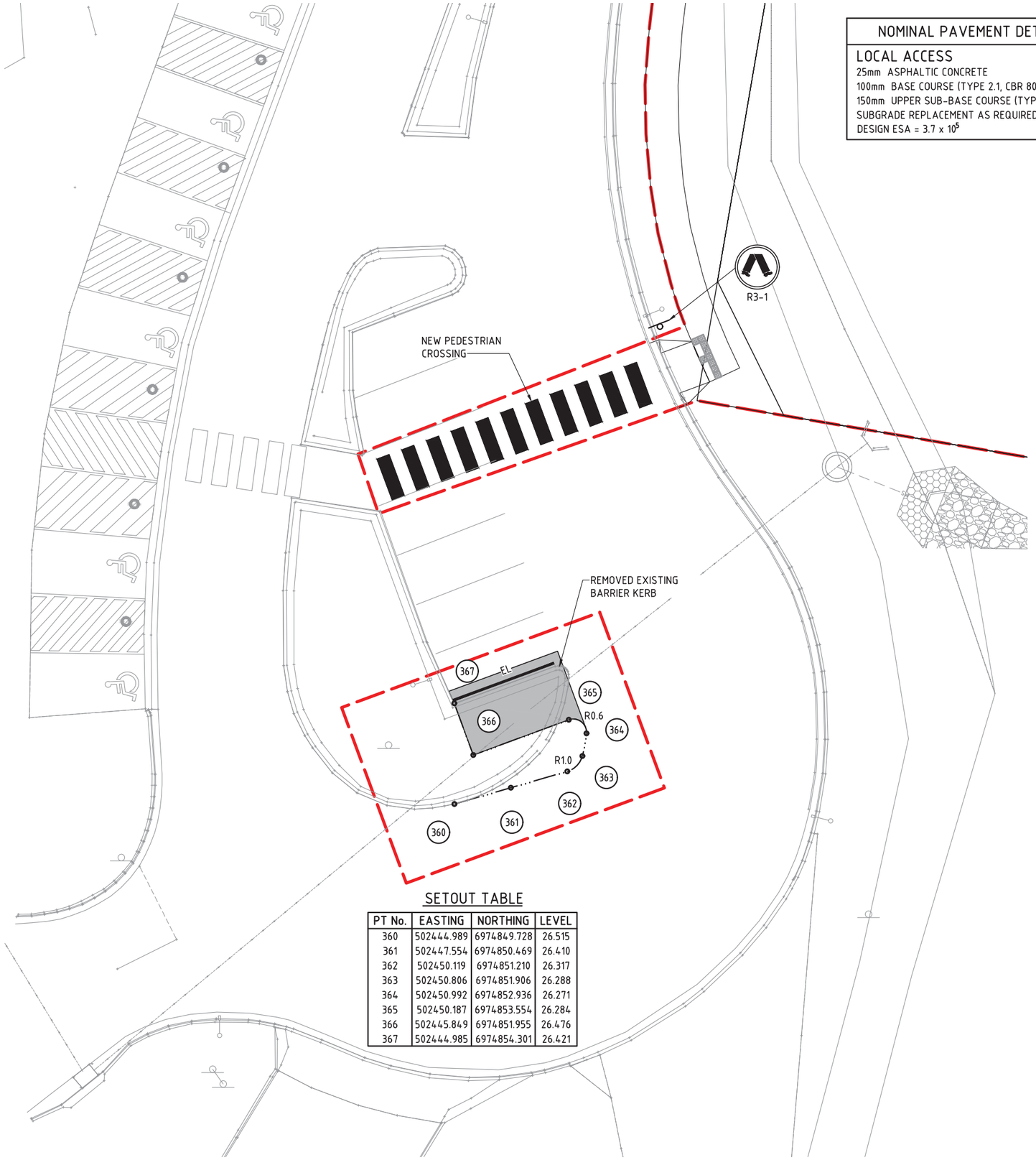


NOMINAL PAVEMENT DETAILS

LOCAL ACCESS

25mm ASPHALTIC CONCRETE
100mm BASE COURSE (TYPE 2.1, CBR 80)
150mm UPPER SUB-BASE COURSE (TYPE 2.3, CBR 45)
SUBGRADE REPLACEMENT AS REQUIRED (TYPE 2.4, CBR 15)
DESIGN ESA = 3.7×10^5

GENERAL NOTES

1. SETOUT TABLES ARE GIVEN AT KERB LIP LEVELS.
2. KERB LIP LEVELS ARE GIVEN AT QUARTER POINTS, TP'S AND EQUAL PARTS U.N.O.
3. KERB RADII AND OFFSETS ARE GIVEN AT NOMINAL KERB FACE .
4. EXTRA DETAIL FOR SETTING OUT IS AVAILABLE ON CAD FILE.
5. FOR KERB INFORMATION REFER TO B.C.C. STD DWG BSD-2001.
6. ALL KERB RAMPS WHERE RAMP FLATTER THAN 1:9 TO INCLUDE TACTILE INDICATORS.

LEGEND

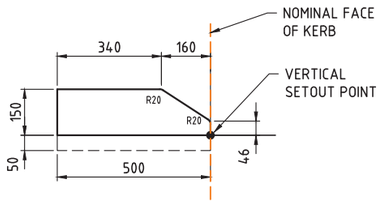
- WORKS BOUNDARY
- MOUNTABLE KERB WITH BACKING STRIP
- BARRIER KERB ONLY (TYPE E)
- NOMINAL FACE OF KERB
- TACTILE GROUND SURFACE INDICATORS (TGSI)
- NEW PAVEMENT
- 150mm — EDGE LINE (EL)

SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
360	502444.989	6974849.728	26.515
361	502447.554	6974850.469	26.410
362	502450.119	6974851.210	26.317
363	502450.806	6974851.906	26.288
364	502450.992	6974852.936	26.271
365	502450.187	6974853.554	26.284
366	502445.849	6974851.955	26.476
367	502444.985	6974854.301	26.421

INTERSECTION DETAIL -

SCALE 1:100



KERB SETOUT DETAIL - MOUNTABLE WITH BACKING STRIP

SCALE 1:10

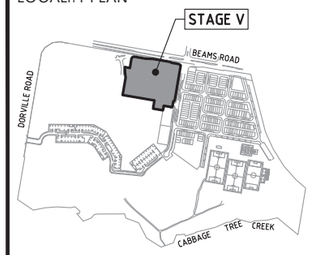
SCALE 0.1 0.05 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0m
1 : 10 (A1 UNREDUCED)

SCALE 1 0.5 0 1 2 3 4 5 6 7 8 9 10m
1 : 100 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved
M. Shaw
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:38+10'00'

Drawing Title
ROADWORKS
INTERSECTION DETAILS
SHEET 3

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	11 of 20

	Drawing No	Revision
A1	21-121-11	A

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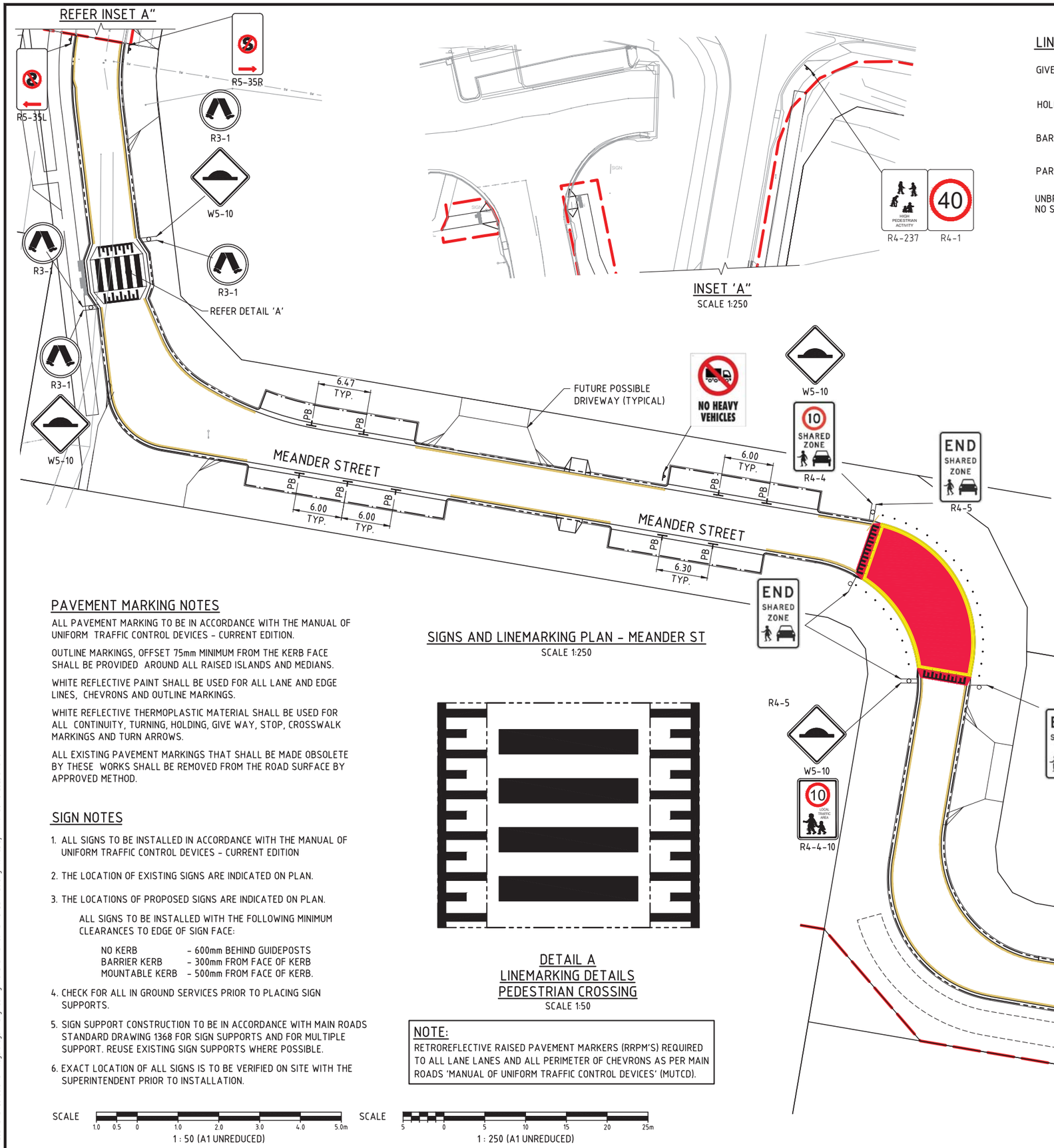


INSET 'A"
SCALE 1:250

LINEMARKING LEGEND

GIVE WAY LINE (GWL)	600mm STRIPE AND GAP, 300mm
HOLD LINE (HL)	600mm, 600mm, 200mm
BARRIER LINE (BL)	80mm
PARKING BAY LINE (PB)	100mm
UNBROKEN YELLOW NO STOPPING LINE (LLCY)	100mm
TACTILE GROUND SURFACE INDICATORS (TGSI)	

PAVEMENT MARKING NOTES

ALL PAVEMENT MARKING TO BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - CURRENT EDITION.

OUTLINE MARKINGS, OFFSET 75mm MINIMUM FROM THE KERB FACE SHALL BE PROVIDED AROUND ALL RAISED ISLANDS AND MEDIANS.

WHITE REFLECTIVE PAINT SHALL BE USED FOR ALL LANE AND EDGE LINES, CHEVRONS AND OUTLINE MARKINGS.

WHITE REFLECTIVE THERMOPLASTIC MATERIAL SHALL BE USED FOR ALL CONTINUITY, TURNING, HOLDING, GIVE WAY, STOP, CROSSWALK MARKINGS AND TURN ARROWS.

ALL EXISTING PAVEMENT MARKINGS THAT SHALL BE MADE OBSOLETE BY THESE WORKS SHALL BE REMOVED FROM THE ROAD SURFACE BY APPROVED METHOD.

SIGN NOTES

1. ALL SIGNS TO BE INSTALLED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - CURRENT EDITION
2. THE LOCATION OF EXISTING SIGNS ARE INDICATED ON PLAN.
3. THE LOCATIONS OF PROPOSED SIGNS ARE INDICATED ON PLAN.

   ALL SIGNS TO BE INSTALLED WITH THE FOLLOWING MINIMUM CLEARANCES TO EDGE OF SIGN FACE:

NO KERB	- 600mm BEHIND GUIDEPOSTS
BARRIER KERB	- 300mm FROM FACE OF KERB
MOUNTABLE KERB	- 500mm FROM FACE OF KERB.

4. CHECK FOR ALL IN GROUND SERVICES PRIOR TO PLACING SIGN SUPPORTS.
5. SIGN SUPPORT CONSTRUCTION TO BE IN ACCORDANCE WITH MAIN ROADS STANDARD DRAWING 1368 FOR SIGN SUPPORTS AND FOR MULTIPLE SUPPORT. REUSE EXISTING SIGN SUPPORTS WHERE POSSIBLE.
6. EXACT LOCATION OF ALL SIGNS IS TO BE VERIFIED ON SITE WITH THE SUPERINTENDENT PRIOR TO INSTALLATION.

SIGNS AND LINEMARKING PLAN - MEANDER ST
SCALE 1:250

DETAIL A
LINEMARKING DETAILS
PEDESTRIAN CROSSING
SCALE 1:50

NOTE:
RETROREFLECTIVE RAISED PAVEMENT MARKERS (RRPM'S) REQUIRED TO ALL LANE LANES AND ALL PERIMETER OF CHEVRONS AS PER MAIN ROADS 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (MUTCD).

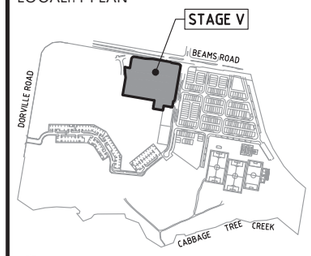
SCALE 1.0 0.5 0 1.0 2.0 3.0 4.0 5.0m
1 : 50 (A1 UNREDUCED)

SCALE 5 0 5 10 15 20 25m
1 : 250 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

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Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:38+10'00'

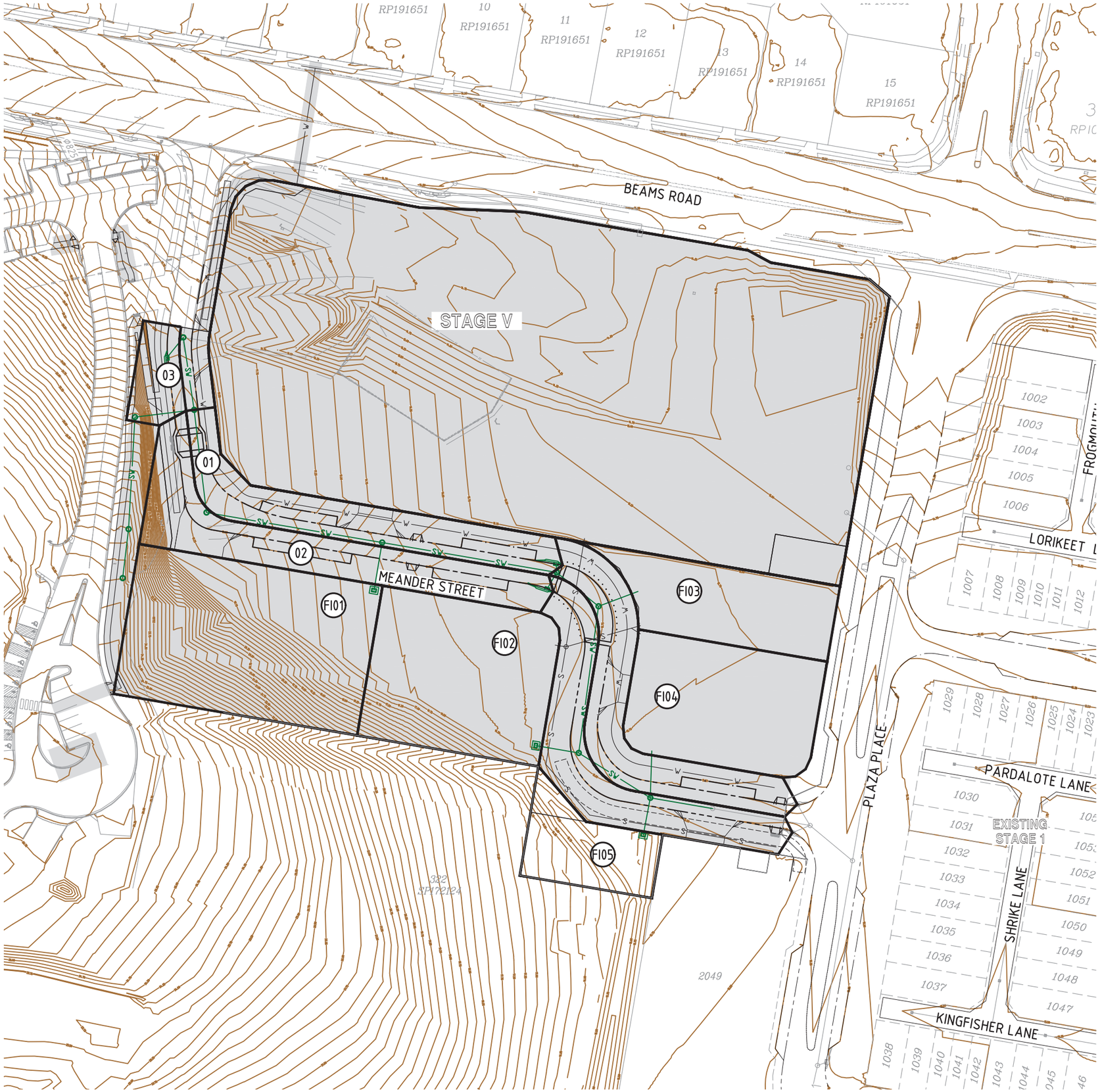
Drawing Title
ROADWORKS
SIGNS AND LINEMARKING PLAN

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	12 of 20

	Drawing No	Revision
A1	21-121-12	A

M:\2021\21121 Carseldine Village Stage V\Engineering\ACAD\21-121-09-12-RD-DETAILS.dwg Plotted by: RW on 30/10/2023 3:45:45 PM



CATCHMENT PLAN
SCALE 1:500

LEGEND

- PROPOSED CATCHMENT BOUNDARY
- (1BA) CATCHMENT NUMBER
- BARRIER KERB AND CHANNEL - TYPE E
- KERB ONLY - TYPE E
- PROPOSED STORMWATER DRAINAGE
- 36.0 SURFACE CONTOURS

CATCHMENT TABLE

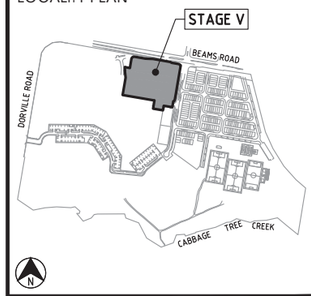
CATCHMENT No.	AREA (ha)
03	0.028
FI01	0.231
01	0.099
02	0.121
FI03	0.101
FI02	0.171
FI04	0.141
FI05	0.061

SCALE 10 5 0 10 20 30 40 50m
1 : 500 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

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Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:38+10'00'

Drawing Title
STORMWATER CATCHMENT PLAN

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	13 of 20

A1	Drawing No	Revision
	21-121-13	A

M:\2021\21121 Carseldine Village Stage V\Engineering\ACAD\21-121-13-SW-CATCHMENT.dwg Plotted by: RW on 30/10/2023 3:45:52 PM

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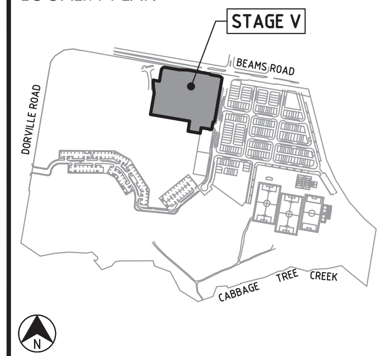
LOCATION					TIME			SUB-CATCHMENT RUNOFF						INLET DESIGN							DRAIN DESIGN												HEADLOSSES											PART FULL		DESIGN LEVELS						
DESIGN ARI (yrs)	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT (%)	tc SUB-CATCHMENT TIME OF CONC. (min)	I RAINFALL INTENSITY (mm/h)	C10 10yr RUNOFF CO-EFFICIENT	C CO-EFFICIENT OF RUNOFF	A SUB-CATCHMENT AREA (ha)	C*A EQUIVALENT AREA (ha)	+CA SUM OF (C * A) (ha)	Q SUB-CATCHMENT DISCHARGE (l/s)	FLOW IN K&C (INC. BYPASS) (l/s)	ROAD GRADE AT INLET (%)	MINOR FLOW ROAD CAPACITY (l/s)	INLET TYPE	Qg FLOW INTO INLET (l/s)	Qb BYPASS FLOW (l/s)	BYPASS STRUCTURE No.	tc CRITICAL TIME OF CONC. (min)	I RAINFALL INTENSITY (mm/h)	+CA TOTAL (C * A) (ha)	Qt MAJOR TOTAL FLOW (l/s)	Qm MAJOR SURFACE FLOW CAPACITY (l/s)	Qs MAJOR SURFACE FLOW (l/s)	Qp PIPE FLOW (l/s)	L REACH LENGTH (m)	S PIPE GRADE (%)	PIPE / BOX DIMENSIONS (CLASS) (mm)	V FLOW VELOCITY FULL (PIPE GRADE VELOCITY) (m/s)	T TIME OF FLOW IN REACH (min)	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	V2/2g VELOCITY HEAD (m)	Ku U/S HEADLOSS COEFFICIENT	hu U/S PIPE STRUCT. HEADLOSS (m)	Kl LAT. HEADLOSS CO-EFFICIENT	hl LAT. PIPE STRUCT. HEADLOSS (m)	Kw W.S.E CO-EFFICIENT	hw CHANGE IN W.S.E (m)	Sf PIPE FRICTION SLOPE (%)	hf PIPE FRICTION HEADLOSS (L * Sf) (m)	DEPTH (m)	Vp VELOCITY (m/s)	OBVERT LEVELS (m)	DRAIN SECTION H.G.L (m)	UPSTREAM H.G.L (m)	LAT. H.G.L (m)	W.S.E. (m)	SURFACE OR K&C INVERT LEVEL (m)	STRUCTURE No.
10 50	1/B	1/B to 2/B															24				0.00 0.00	215 291	0.000 0.000	0			0 (Pipe flow= Grate flow)	12.216	9.63	450(3)	0.00 (5.56)	0.20			0.000	0.20	0.000			0.20	0.000	0.00	0.000			23.841 22.665	23.391 22.215	23.391		23.391	25.238	1/B
10 50	2/B	2/B to 3/B															24				0.20 0.20	215 291	0.000 0.000	0			0 (Pipe flow= Grate flow)	27.856	6.21	450(3)	0.00 (4.46)	0.46			0.000	0.20	0.000			0.20	0.000	0.00	0.000			22.645 20.916	22.195 20.466	22.195		22.195	24.507	2/B
10 50	3/B	3/B to 2/A															24				0.66 0.66	215 291	0.000 0.000	0			0 (Pipe flow= Grate flow)	14.785	8.00	450(3)	0.00 (5.07)	0.25			0.000	0.20	0.000			0.20	0.000	0.00	0.000			18.385 17.202	17.935 16.752	17.935		17.935	21.858	3/B
10 50	EXMH/A	EXMH/A to 1/A															24				5.64 5.64	206 279	1.763 1.763	1366			1366 Additional flow: 1.366 cumecs (Pipe flow= Sum upstr atten flows)	13.764	1.07	1200(3)	1.19 (3.57)	0.19			0.072	1.50	0.109			1.50	0.109	0.12	0.016			15.778 15.631	15.993 15.977	16.102		16.102	17.521	EXMH/A
10 50	G03	G03 to 1/A	03	ROAD		5.00 5.00	215 291		0.88 1.00	0.028 0.028	0.025 0.028	0.025 0.028	15 23	15	0.00	0	4	14 (UNLOCKED	1 0)	LOST	5.00 5.00	215 291	0.025 0.028	23			14 (Pipe flow= Grate flow)	6.488	3.18	375(3)	0.13 (2.83)	0.11			0.001	7.90	0.007			7.90	0.007	0.01	0.000	0.054 (0.041 1y)	1.43 (1.20 1y)	17.546 17.340	17.546 17.019	17.553		17.553	18.500	G03
10 50	1/A	1/A to 2/A	03														24				5.83 5.83	204 275	1.788 1.791	1368			1366 (Pipe flow= Sum upstr atten flows)	18.156	0.40	1200(3)	1.19 (2.19)	0.25		Qo 1.366 Do 1200 Flow G03 made eqv grate flow Angle 18 Chart 36 S/Do 2.5 chartdeg Du/Do 1.00 K0 1.51 K0.5 1.86 Qu/Qo 0.99 Cg 0.03 K 1.52 S/Do 2.0 K0 1.79 K0.5 2.07 K 1.80 S/Do 1.5 K0 2.11 K0.5 2.54 K 2.12	0.072	1.81	0.130	Interp val for S/Do 1.36 Kw 2.21 CHART 35 S/Do 2.0 K0 1.55 K0.5 1.74 K 1.55 S/Do 1.5 K0 1.75 K0.5 1.80 K 1.75 Interp val for S/Do 1.36 Ku 1.81 K vals above for stepped pipes as grate flow		2.21	0.159	0.12	0.022			15.571 15.498	15.847 15.825	15.977		16.006	18.275	1/A
10 50	2/A	2/A to 3/A	03														24				6.08 6.08	201 271	1.788 1.788	1346	(Sum Imp Area Maj 1.790 Sum Flow Maj 1.348 Overland Flow Maj -0.018) (100% of overland flow diverted = -0.018; Equiv Area = Diverted Flow x 360/271mm/h = 0.002 to outside network)		1366 (Pipe flow= Sum upstr atten flows)	25.659	0.40	1200(3)	1.19 (2.19)	0.36		Qo 1.366 Do 1200 Flow 3/B made eqv grate flow CHART 50 Du/Do1.00 alpha 2 K'w 0.13 Vu 1.21 WSE 0.03	0.072	0.34	0.024	Ku 0.34 Kw 0.47 K vals above for stepped pipes as grate flow		0.47	0.034	0.12	0.031			15.478 15.376	15.801 15.770	15.825		15.835	18.777	2/A
10 50	3/A	3/A to 4/A	03														24				6.44 6.44	196 266	1.785 1.788	1321			1366 (Pipe flow= Sum upstr atten flows)	44.217	0.68	1200(3)	1.19 (2.85)	0.62		Qo 1.366 Do 1200 CHART 50 Du/Do1.00 alpha 73 K'w 0.29 Vu 1.21 WSE 0.14 Ku 1.66 Kw 1.96	0.072	1.66	0.119			1.96	0.141	0.12	0.053			15.356 15.055	15.651 15.598	15.770		15.792	18.139	3/A
10 50	FI01	FI01 to 4/A	FI01			5.00 5.00	215 291		0.88 1.00	0.231 0.231	0.203 0.231	0.203 0.231	121 187 FLOW WIDTH/DEPTH 0.133Dp m	121	0.00	393	#D0.3L3A0.54	121 (UNLOCKED	0 0)	G02	5.00 5.00	215 291	0.203 0.231	187			121 (Pipe flow= Grate flow)	12.006	2.00	375(3)	1.10 (2.24)	0.18			0.062	2.75	0.170			2.75	0.170	0.48	0.057			15.295 15.055	15.655 15.598	15.825		15.825	16.469	FI01
10 50	4/A	4/A to 5/A	03;FI01														24				7.06 7.06	190 257	1.988 2.019	1441	1272	10	1431 (Pipe flow= Sum upstr atten flows)	43.920	0.20	1350(3)	0.99 (1.68)	0.73		Qo 1.431 Do 1350 Routine 2.1 CHART 53 Du/Do 0.9 Qu/Qo 0.93 Kw=Ku= -0.13 Combined pipes in line case Join Pipes: 3/A and FI01	0.050	0.20	0.010	Vel1 1.171 Vel2 0.970 Eq Dia 1255 Angle 173 Flow 1.431 CHART 50 Du/Do0.93 alpha 0 K'w 0.05 Vu 1.16 WSE 0.00 Ku -0.05 Kw 0.02 Interpolated Ku= -0.13 Kw= -0.13		0.20	0.010	0.07	0.030			15.055 14.967	15.588 15.558	15.598		15.598	16.420	4/A
10 50	G01	G01 to 5/A	01	ROAD		5.00 5.00	215 291		0.88 1.00	0.099 0.099	0.087 0.099	0.087 0.099	52 80 FLOW WIDTH 2.183 m	52	0.64	83	5	51 (UNLOCKED	1 0)	LOST	5.00 5.00	215 291	0.087 0.099	80	589	29	51 (Pipe flow= Grate flow)	2.243	2.00	375(3)	0.46 (2.24)	0.04			0.011	7.90	0.085			7.90	0.085	0.09	0.002			14.774 14.729	15.560 15.558	15.645		15.645	15.736	G01
10 50	G02	G02 to 5/A	02	ROAD		5.00 5.00	215 291		0.88 1.00	0.121 0.121	0.106 0.121	0.106 0.121	63 98 FLOW WIDTH 2.394 m DOWNSTREAM 0.610m	63	0.64	83	5	57 (UNLOCKED	6 0)	LOST	5.00 5.00	215 291	0.106 0.121	98	588	40	57 (Pipe flow= Grate flow)	4.858	2.00	375(3)	0.52 (2.24)	0.08			0.014	7.90	0.109			7.90	0.109	0.11	0.005			14.769 14.672	15.563 15.558	15.672		15.672	15.736	G02
10 50	5/A	5/A to 6/A	03;FI01;01;02														24				7.79 7.79	183 248	2.181 2.239	1542	519	71	1471 (Pipe flow= Sum upstr atten flows)	13.367	0.20	1350(3)	1.01 (1.68)	0.22			0.052	1.20	0.062			1.20	0.062	0.07	0.010			14.947 14.920	15.496 15.486	15.558		15.558	15.771	5/A
10 50	FI03	FI03 to 6/A	FI03			5.00 5.00	215 291		0.88 1.00	0.101 0.101	0.089 0.101	0.089 0.101	53 82 FLOW WIDTH/DEPTH 0.076Dp m	53	0.00	393	#D0.3L3A0.54	53 (UNLOCKED	0 0)	LOST	5.00 5.00	215 291	0.089 0.101	82			53 (Pipe flow= Grate flow)	10.456	2.00	375(3)	0.48 (2.24)	0.17			0.012	2.75	0.032			2.75	0.032	0.09	0.010			14.323 14.114	15.496 15.486	15.528		15.528	15.734	FI03
10 50	6/A	6/A to 7/A	03;FI01;01;02;FI0 3														24				8.01 8.01	181 246	2.270 2.340	1599	519	99	1500 (Pipe flow= Sum upstr atten flows)	36.720	0.20	1350(3)	1.03 (1.68)	0.59		Qo 1.500 Do 1350 Flow FI03 made eqv grate flow Angle 59 Chart 45 S/Do 2.5 chartdeg Du/Do 1.00 K0 2.16 K0.5 1.81 Qu/Qo 0.97 Cg 0.08 K 2.14 S/Do 2.0 K0 2.47 K0.5 2.34 K 2.46 S/Do 1.5 K0 2.74 K0.5 2.80 K 2.75	0.054	1.50	0.081	Interp val for S/Do 1.48 Kw 2.76 CHART 44 S/Do 2.0 K0 1.99 K0.5 2.11 K 2.00 S/Do 1.5 K0 2.12 K0.5 2.17 K 2.13 Interp val for S/Do 1.48 Ku 2.13 K vals above for stepped pipes as grate flow		2.76	0.149	0.08	0.028			14.900 14.827	15.405 15.377	15.486		15.554	15.708	6/A
10 50	FI02	FI02 to 7/A	FI02			5.00 5.00	215 291		0.88 1.00	0.171 0.171	0.150 0.171	0.150 0.171	90 138 FLOW WIDTH/DEPTH 0.108Dp m	90	0.00	393	#D0.3L3A0.54	90 (UNLOCKED	0 0)	LOST	5.00 5.00	215 291	0.150 0.171	138			90 (Pipe flow= Grate flow)	10.804	2.00	375(3)	0.81 (2.24)	0.18			0.033	2.75	0.092			2.75	0.092	0.26	0.028			14.710 14.494	15.405 15.377	15.497		15.497	15.741	FI02
10 50	7/A	7/A to 8/A	03;FI01;01;02;FI0 3;FI02														24				8.60 8.60	176 239	2.420 2.511	1667	519	135	1532 (Pipe flow= Sum upstr atten flows)	20.949	2.50	1350(3)	1.05 (5.92)	0.33			0.056	1.50	0.084			1.50	0.084	0.08	0.017			14.659 14.135	15.293 15.276	15.377		15.377	15.517	7/A
10 50	FI04	FI04 to 8/A	FI04			5.00 5.00	215 291		0.88 1.00	0.141 0.141	0.124 0.141	0.124 0.141	74 114 FLOW WIDTH/DEPTH 0.095Dp m	74	0.00	393	#D0.3L3A0.54	74 (UNLOCKED	0 0)	LOST	5.00 5.00	215 291	0.124 0.141	114			74 (Pipe flow= Grate flow)	11.641	2.00	375(3)	0.67 (2.24)	0.19			0.023	2.75	0.063			2.75	0.063	0.18	0.021			14.081 13.848	15.297 15.276	15.360		15.360	15.484	FI04
10 50	FI05	FI05 to 8/A	FI05			5.00 5.00	215 291		0.88 1.00	0.061 0.061	0.054 0.061	0.054 0.061	32 49 FLOW WIDTH/DEPTH 0.055Dp m	32	0.00	393	#D0.3L3A0.54	32 (UNLOCKED	0 0)	LOST	5.00 5.00	215 291	0.054 0.061	49			32 (Pipe flow= Grate flow)	9.358	2.00	375(3)	0.29 (2.24)	0.16			0.004	2.75	0.012			2.75	0.012	0.03	0.003			14.102 13.915	15.279 15.276	15.291		15.291	15.180	FI05

CALCULATIONS TABLE

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client

ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project

CARSELDINE VILLAGE STAGE V

ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved

[illegible]

Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:39+10'00'

Drawing Title

STORMWATER CALCULATION TABLE SHEET 1

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	14 of 20

	Drawing No	Revision
A1	21-121-14	A

LOCATION					TIME			SUB-CATCHMENT RUNOFF						INLET DESIGN							DRAIN DESIGN										HEADLOSSES										PART FULL		DESIGN LEVELS							
						tc	I	C10	C	A	C*A	+CA	Q					Qg	Qb		tc	I	+CA	Qt	Qm	Qs	Qp	L	S		V	T			V2/2g	Ku	hu	Kl	hl	Kw	hw	Sf	hf		Vp							
DESIGN ARI	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY	10yr RUNOFF CO-EFFICIENT	CO-EFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C * A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C * A)	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCT. HEADLOSS	LAT. HEADLOSS CO-EFFICIENT	LAT. PIPE STRUCT. HEADLOSS	W.S.E. CO-EFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L * Sf)	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	UPSTREAM H.G.L	LAT. H.G.L	W.S.E.	SURFACE OR K&C INVERT LEVEL	STRUCTURE No.
yrs					%	min	mm/h			ha	ha	ha	l/s	l/s	%	l/s		l/s	l/s		min	mm/h	ha	l/s	l/s	l/s	l/s	m	%	mm	m/s				m		m		m		m	%	m	m	m/s	m	m	m	m	m	m	
10 50	8/A	8/A to 9/A	03;FI01;01;02;FI0 3;FI02;FI04;FI05														24				8.93 8.93	174 236	2.598 2.713	1779	519	178 (Pipe flow=	1600 Sum upstr	15.700 atten flows)	0.40	1350(3)	1.10 (2.37)	0.24		Qo 1.600 Do 1350 Routine 3.2 Join Pipes: FI04 and 7/A Vel1 0.543 Vel2 1.058 Eq Dia 1389 Angle 204 Flow 1.574 Routine 2.10 CHART 49 High vel Ist Eqv FI04 & 7/A Dhv 1389 Qhv 1.574 Dhv/Dv 3.7 Dhv/Do 1.03	0.062	1.17	0.072	Qhv/Qo 0.98 H 3.54 Low vel latrl FI05 Div 375 Qlv 0.026 Div/Do 0.28 Qlv/Qo 0.02 L -0.15 H-L 3.69 No grate flow: H-L -0.2 = 3.49 Ku=Kw= 3.49 CHART 53 Du/Do 1.0 Qu/Qo 0.98 Kw=Ku= 0.32 Interpolated Ku= 1.17 Kw= 1.17		1.17	0.072	0.09	0.014			14.115 14.052	15.204 15.190	15.276		15.276	15.430	8/A
10 50	9/A	9/A to EXMH1	03;FI01;01;02;FI0 3;FI02;FI04;FI05														24				9.17 9.17	172 234	2.598 2.713	1764		(Pipe flow=	1600 Sum upstr	24.539 atten flows)	0.22	1350(3)	1.10 (1.76)	0.37		Qo 1.600 Do 1350 CHART 50 Du/Do1.00 alpha 0 K'w 0.05 Vu 1.12 WSE 0.02 Ku 0.31 Kw 0.36	0.062	0.31	0.019			0.36	0.023	0.09	0.021			14.032 13.978	15.171 15.150	15.190		15.194	15.350	9/A
10 50	1/C	1/C to OUTC															24				0.00 0.00	215 291	0.000 0.000	0		(Pipe flow=	0 Grate flow)	4.420	1.00	450(3)	0.00 (1.79)	0.07			0.000	0.20	0.000			0.20	0.000	0.00	0.000			24.909 24.865	24.459 24.415	24.459		24.459	26.036	1/C

CALCULATIONS TABLE

DO NOT SCALE THIS DRAWING
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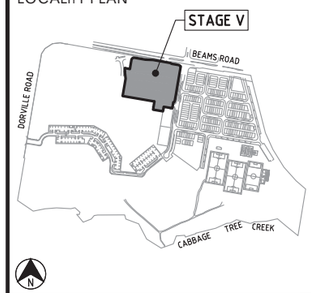
LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE
STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved
M. Shaw
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:39+10'00'

Drawing Title
STORMWATER
CALCULATION TABLE
SHEET 2

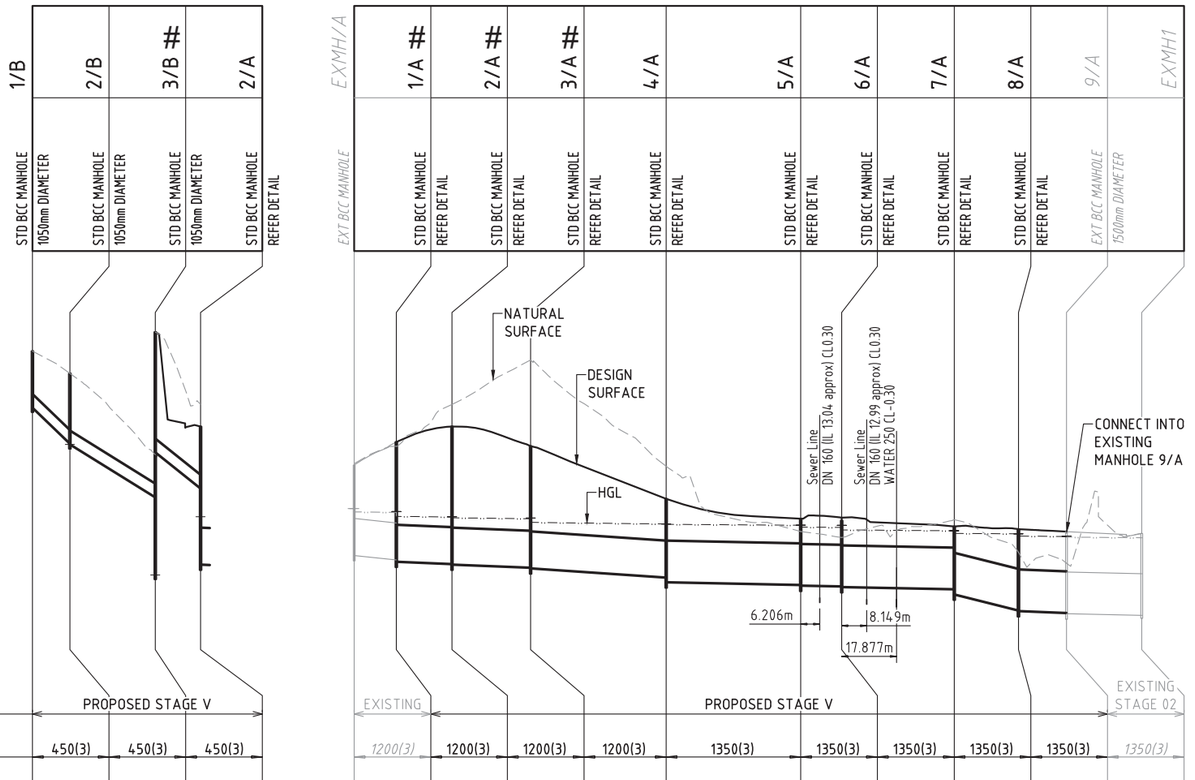
Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	15 of 20

	Drawing No	Revision
A1	21-121-15	A

M:\2021\21121 Carseldine Village Stage V\Engineering\ACAD\21-121-14-15-SW-CALCS.dwg Plotted by: RW on 30/10/2023 3:45:55 PM

STRUCTURE NAME	1/B	2/B	# 3/B	2/A	EXMH/A	# 1/A	# 2/A	# 3/A	4/A	5/A	6/A	7/A	8/A	9/A	EXMH1
STRUCTURE DESCRIPTION	STD BCC MANHOLE 1050mm DIAMETER	STD BCC MANHOLE 1050mm DIAMETER	STD BCC MANHOLE 1050mm DIAMETER	STD BCC MANHOLE REFER DETAIL	EXT BCC MANHOLE	STD BCC MANHOLE REFER DETAIL	STD BCC MANHOLE REFER DETAIL	STD BCC MANHOLE REFER DETAIL	STD BCC MANHOLE REFER DETAIL	STD BCC MANHOLE REFER DETAIL	STD BCC MANHOLE REFER DETAIL	STD BCC MANHOLE REFER DETAIL	STD BCC MANHOLE REFER DETAIL	EXT BCC MANHOLE 1500mm DIAMETER	



#CIVIL CONTRACTOR TO PROVIDE FORM 15/12 ON MANHOLE DESIGN & BUILD

STAGE		PROPOSED STAGE V				EXISTING	PROPOSED STAGE V								EXISTING STAGE 02	
PIPE SIZEmm (Class)		450(3)	450(3)	450(3)		*1200(3)*	1200(3)	1200(3)	1200(3)	1350(3)	1350(3)	1350(3)	1350(3)	1350(3)	*1350(3)*	
PIPE GRADE %		9.63%	6.21%	8.00%		*1.07%*	0.40%	0.40%	0.68%	0.20%	0.20%	0.20%	2.50%	0.40%	*0.22%*	
PIPE SLOPE 1 in X		10.39	16.11	12.50		*93.63*	250.00	250.00	147.04	500.00	499.99	500.00	40.00	250.00	*454.55*	
FULL PIPE FLOW VELOCITY (m/s)		0.00	0.00	0.00		*1.19*	1.19	1.19	1.19	0.99	1.01	1.03	1.05	1.10	*1.10*	
PART FULL FLOW VELOCITY (m/s)																
DATUM RL																
WATER LEVEL IN STRUCTURE	23.391		22.195		16.102	16.006		15.835		15.792		15.598		15.558		15.554		15.377		15.276		15.194		*15.150*	
HYDRAULIC GRADE LEVEL	23.391	23.391	22.195	22.195	17.935	17.935	15.825	15.801	16.102	*15.993*	15.977	15.847	15.825	15.801	15.770	15.651	15.598	15.588	15.558	15.496	15.486	15.405	15.377	15.293	15.276	15.204	15.190	*15.171*	*15.150*	
PIPE FLOW (Cumecs)		0.000		0.000		0.000				*1.366*		1.366		1.366		1.366		1.431		1.471		1.500		1.532		1.600		*1.600*		
PIPE CAPACITY AT GRADE (Cumecs)		0.884		0.710		0.806				*4.090*		2.503		2.503		3.264		2.434		2.434		2.434		8.604		3.442		*2.552*		
DEPTH TO INVERT		1.847	2.292	2.312	1.392	3.923	2.025	4.506	*2.950*	3.851	3.911	4.486	4.506	3.970	3.990	2.572	2.725	2.164	2.184	2.148	2.168	2.050	2.218	2.655	2.675	2.658	*2.678*	*2.672*	
INVERT LEVEL OF DRAIN	23.391	22.215	22.195	20.466	17.935	16.752	14.271	*14.571*	14.424	14.364	14.291	14.271	14.169	14.149	13.848	13.695	13.607	13.587	13.560	13.540	13.467	13.299	12.775	12.755	12.692	*12.672*	*12.618*	
DESIGN SURFACE LEVEL	25.238	24.507	21.858	18.777	17.521	18.275	18.777	18.139	16.420	15.711	15.708	15.517	15.430	15.350	*15.290*															
SETOUT CO-ORDINATE	E:502458.289 N:6974896.742	E:502459.750 N:6974908.870	E:502461.330 N:6974936.681	E:502476.006 N:6974938.475	*E:502475.541 N:6974970.014*	E:502473.319 N:6974956.431	E:502476.006 N:6974938.475	E:502479.081 N:6974913.001	E:502522.666 N:6974905.551	E:502565.958 N:6974898.152	E:502576.359 N:6974889.756	E:502711.457 N:6974853.365	E:502589.209 N:6974842.241	E:502604.678 N:6974839.558	*E:502628.856 N:6974835.365*	
RUNNING CHAINAGE	0.000	12.216	12.216	27.856	40.072	14.785	54.857	*0.000*	13.764	13.764	18.156	31.920	25.659	57.579	44.217	101.796	43.920	145.716	13.367	159.083	36.720	195.803	20.949	216.752	15.700	232.452	*24.539*	*256.991*		

LINE

CONSTRUCTION EQUIPMENT	PIPE CLASS	MINIMUM COMPACTION COVER TO PIPE OBVERT			
		375ø	450ø	525ø	600ø
VIBRATORY RAMMER (UP TO 75kg)	2	0.450	0.400	0.400	0.350
	3	0.300	0.300	0.3000	0.250
VIBRATORY TRENCH ROLLER (UP TO 2t)	2	0.400	0.400	0.350	0.250
	3	0.250	0.200	0.200	0.200
VIBRATORY SMOOTH DRUM (UP TO 7t)	2	0.700	0.700	0.650	0.650
	3	0.450	0.450	0.450	0.350
VIBRATORY SMOOTH DRUM (UP TO 10t)	2	0.850	0.850	0.800	0.800
	3	0.550	0.550	0.500	0.500
EXCAVATOR & COMPACTION WHEEL (15t)	2	0.700	0.650	0.650	0.650
	3	0.450	0.450	0.450	0.450
EXCAVATOR & COMPACTION WHEEL (25t)	2	1.050	1.000	0.950	0.900
	3	0.650	0.650	0.650	0.650
GRADER (CAT120H) (14.5t)	2	0.600	0.600	0.450	0.200
	3	0.600	0.450	0.450	0.200
GRADER (CAT140H) (17.0t)	2	0.600	0.600	0.600	0.200
	3	0.600	0.200	0.200	0.200
SCRAPER (CAT613C11) (27.2t)	2	0.600	0.600	0.600	0.600
	3	0.600	0.600	0.600	0.600
SCRAPER (CAT621F) (53.8t)	2	0.700	0.700	0.650	0.650
	3	0.650	0.650	0.600	0.600
DOZER (CATD7 G)	2	0.600	0.600	0.600	0.200
	3	0.200	0.200	0.200	0.200
DOZER (CATD9 R)	2	0.600	0.600	0.600	0.600
	3	0.600	0.600	0.600	0.600
EXCAVATOR (CAT315B) (15.8t)	2	0.200	0.200	0.200	0.200
	3	0.200	0.200	0.200	0.200
EXCAVATOR (CAT317) (17.3t)	2	0.200	0.200	0.200	0.200
	3	0.200	0.200	0.200	0.200
EXCAVATOR (CAT325B) (25.9t)	2	0.200	0.200	0.200	0.200
	3	0.200	0.200	0.200	0.200

SCALE A 1:1000 (Horiz.) 10 5 0 10 20 30 40 50 60 70 80 90 100m

B 1:100 (Vert.) 1 0.5 0 1 2 3 4 5 6 7 8 9 10m

(A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
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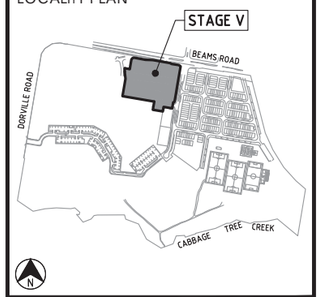
LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved
M. Shaw
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:39+10'00'

Drawing Title
STORMWATER LONGITUDINAL SECTIONS SHEET 1

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

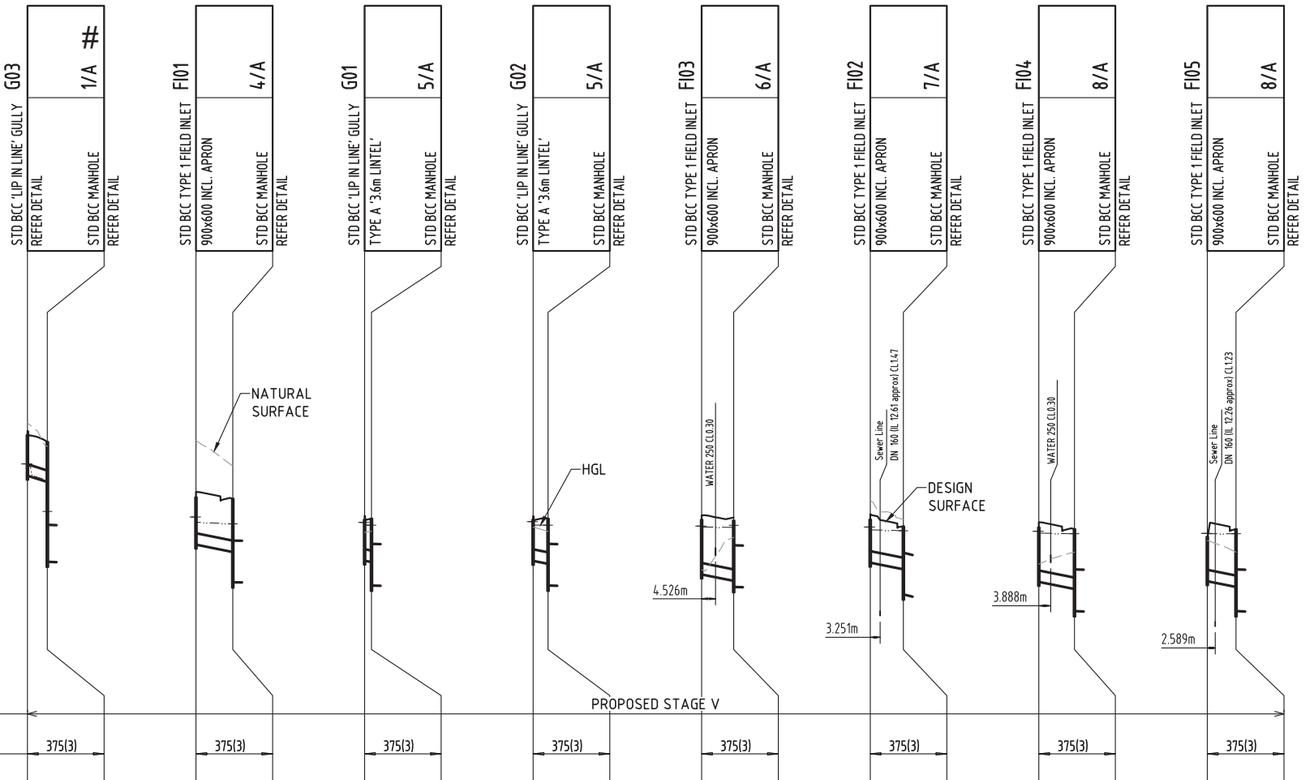
Scale	Sheet
AS SHOWN	16 of 20

	Drawing No	Revision
A1	21-121-16	A

M:\2021\21121 Carseldine Village Stage V\Engineering\ACAD\21-121-16-17-SW-LONGS.dwg Plotted by: RW on 30/10/2023 3:45:59 PM

STRUCTURE NAME	G03	#	FI01	4/A	G01	5/A	G02	5/A
STRUCTURE DESCRIPTION	STD BCC 'LIP IN LINE' GULLY REFER DETAIL	1/A STD BCC MANHOLE REFER DETAIL	STD BCC TYPE 1 FIELD INLET 900x600 INCL. APRON	STD BCC MANHOLE REFER DETAIL	STD BCC 'LIP IN LINE' GULLY TYPE A '3.6m LINTEL'	STD BCC MANHOLE REFER DETAIL	STD BCC 'LIP IN LINE' GULLY TYPE A '3.6m LINTEL'	STD BCC MANHOLE REFER DETAIL
STAGE	PROPOSED STAGE V							
PIPE SIZEmm (Class)	375(3)		375(3)		375(3)		375(3)	
PIPE GRADE %	3.18%		2.00%		2.00%		2.00%	
PIPE SLOPE 1 in X	31.43		50.00		50.00		50.00	
FULL PIPE FLOW VELOCITY (m/s)	0.13		1.10		0.46		0.52	
PART FULL FLOW VELOCITY (m/s)	1.43 (1.20 1y)							
DATUM RL	3.0							
WATER LEVEL IN STRUCTURE	17.553	16.006	15.825	15.598	15.645	15.558	15.612	15.558
HYDRAULIC GRADE LEVEL	17.553	17.546 / 15.977	15.825	15.655 / 15.598	15.645	15.560 / 15.558	15.612	15.563 / 15.558
PIPE FLOW (Cumecs)		0.014		0.121		0.051		0.057
PIPE CAPACITY AT GRADE (Cumecs)		0.312		0.248		0.248		0.248
DEPTH TO INVERT		1.329 / 1.310		1.549 / 1.740		1.337 / 1.417		1.342 / 1.474
INVERT LEVEL OF DRAIN		17.171 / 16.965		14.920 / 14.680		14.399 / 14.354		14.394 / 14.297
DESIGN SURFACE LEVEL	18.500	18.275	16.469	16.420	15.736	15.771	15.736	15.771
SETOUT CO-ORDINATE	E:502469.239 N:6974951.386	E:502473.319 N:6974956.431	E:502520.643 N:6974893.717	E:502522.666 N:6974905.551	E:502565.857 N:6974900.393	E:502565.958 N:6974898.152	E:502563.563 N:6974893.925	E:502565.958 N:6974898.152
RUNNING CHAINAGE	0.000 / 6.488	6.488	0.000 / 12.006	12.006	0.000 / 2.243	2.243	0.000 / 4.858	4.858
LINE	3		4		5		6	

STRUCTURE NAME	FI03	6/A	FI02	7/A	FI04	8/A	FI05	8/A
STRUCTURE DESCRIPTION	STD BCC TYPE 1 FIELD INLET 900x600 INCL. APRON	STD BCC MANHOLE REFER DETAIL	STD BCC TYPE 1 FIELD INLET 900x600 INCL. APRON	STD BCC MANHOLE REFER DETAIL	STD BCC TYPE 1 FIELD INLET 900x600 INCL. APRON	STD BCC MANHOLE REFER DETAIL	STD BCC TYPE 1 FIELD INLET 900x600 INCL. APRON	STD BCC MANHOLE REFER DETAIL
STAGE								
PIPE SIZEmm (Class)	375(3)		375(3)		375(3)		375(3)	
PIPE GRADE %	2.00%		2.00%		2.00%		2.00%	
PIPE SLOPE 1 in X	50.00		50.00		50.00		50.00	
FULL PIPE FLOW VELOCITY (m/s)	0.48		0.81		0.67		0.29	
PART FULL FLOW VELOCITY (m/s)								
DATUM RL								
WATER LEVEL IN STRUCTURE	15.528	15.554	15.497	15.377	15.360	15.276	15.291	15.276
HYDRAULIC GRADE LEVEL	15.528	15.496 / 15.486	15.497	15.405 / 15.377	15.360	15.297 / 15.276	15.291	15.279 / 15.276
PIPE FLOW (Cumecs)		0.053		0.090		0.074		0.032
PIPE CAPACITY AT GRADE (Cumecs)		0.248		0.248		0.248		0.248
DEPTH TO INVERT		1.786 / 1.969		1.406 / 1.398		1.778 / 1.957		1.453 / 1.890
INVERT LEVEL OF DRAIN		13.948 / 13.739		14.335 / 14.119		13.706 / 13.473		13.727 / 13.540
DESIGN SURFACE LEVEL	15.734	15.708	15.741	15.517	15.484	15.430	15.180	15.430
SETOUT CO-ORDINATE	E:502586.151 N:6974893.423	E:502576.359 N:6974889.756	E:502560.808 N:6974885.186	E:502571.457 N:6974853.365	E:502589.594 N:6974853.876	E:502589.209 N:6974842.241	E:502587.475 N:6974833.045	E:502589.209 N:6974842.241
RUNNING CHAINAGE	0.000 / 10.456	10.456	0.000 / 10.804	10.804	0.000 / 11.641	11.641	0.000 / 9.358	9.358
LINE	7		8		9		10	



SCALE A 1:1000 (Horiz.) 10 5 0 10 20 30 40 50 60 70 80 90 100m

B 1:100 (Vert.) 1 0.5 0 1 2 3 4 5 6 7 8 9 10m

(A1 UNREDUCED)

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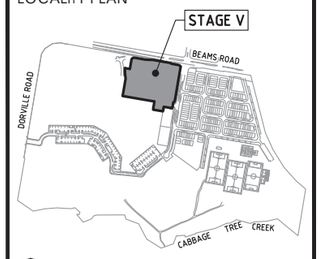
LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client

ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project

CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved

M. Shaw

Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:40+10'00'

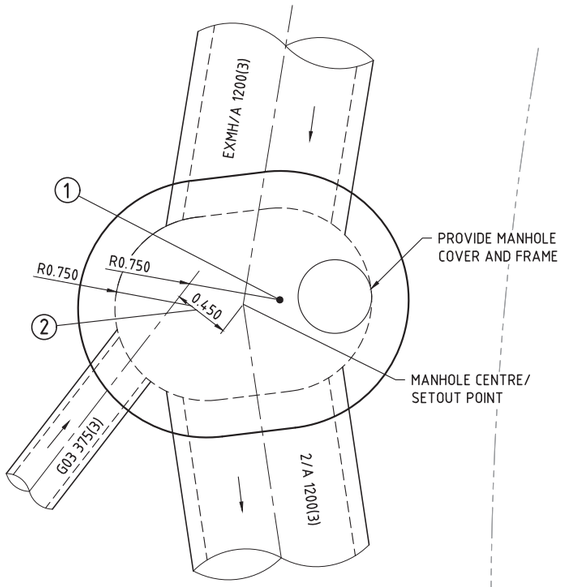
Drawing Title

STORMWATER LONGITUDINAL SECTIONS SHEET 2

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	17 of 20

A1	Drawing No	Revision
	21-121-17	A

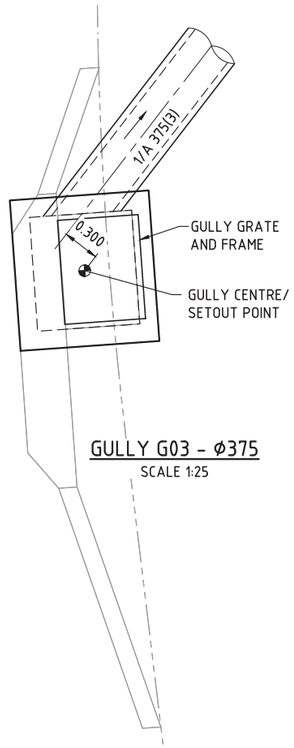


MANHOLE 1/A - ϕ1500 EXT. 600

SCALE 1:25

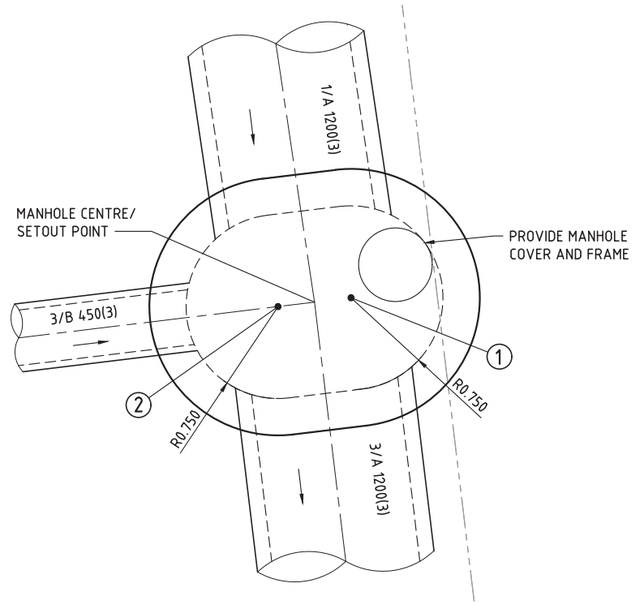
SETOUT TABLE

POINT	EASTING	NORTHING
1	502473.617	6974956.467
2	502473.021	6974956.395



GULLY G03 - ϕ375

SCALE 1:25

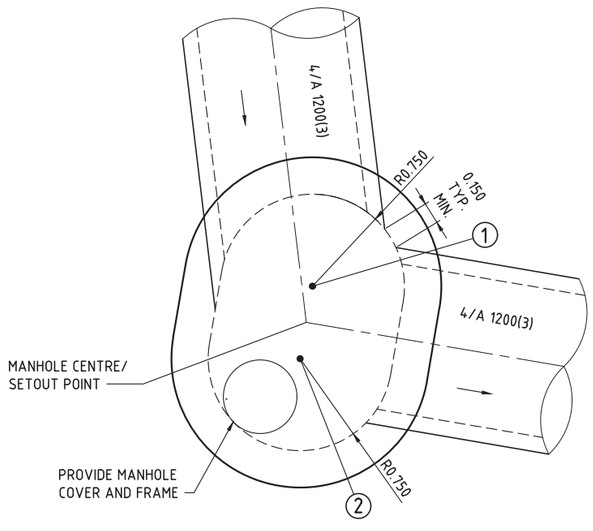


MANHOLE 2/A - ϕ1500 EXT. 600

SCALE 1:25

SETOUT TABLE

POINT	EASTING	NORTHING
1	502476.304	6974938.511
2	502475.708	6974938.439

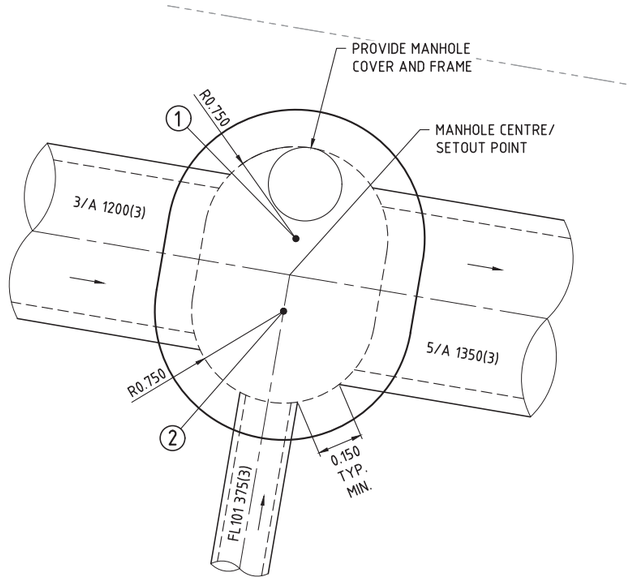


MANHOLE 3/A - ϕ1500 EXT. 600

SCALE 1:25

SETOUT TABLE

POINT	EASTING	NORTHING
1	502479.132	6974913.297
2	502479.030	6974912.705



MANHOLE 4/A - ϕ1500 EXT. 600

SCALE 1:25

SETOUT TABLE

POINT	EASTING	NORTHING
1	502522.717	6974905.847
2	502522.615	6974905.255

SCALE 0.5 0 0.5 1.0 1.5 2.0 2.5m

1 : 25 (A1 UNREDUCED)

DO NOT SCALE THIS DRAWING
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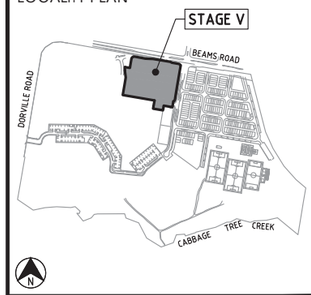
NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client

ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project

CARSELDINE VILLAGE
STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
07 3017 1900
www.kngroup.com.au

Approved

Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:40+10'00'

Drawing Title

STORMWATER
MANHOLE DETAILS
SHEET 1

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	18 of 20

	Drawing No	Revision
A1	21-121-18	A

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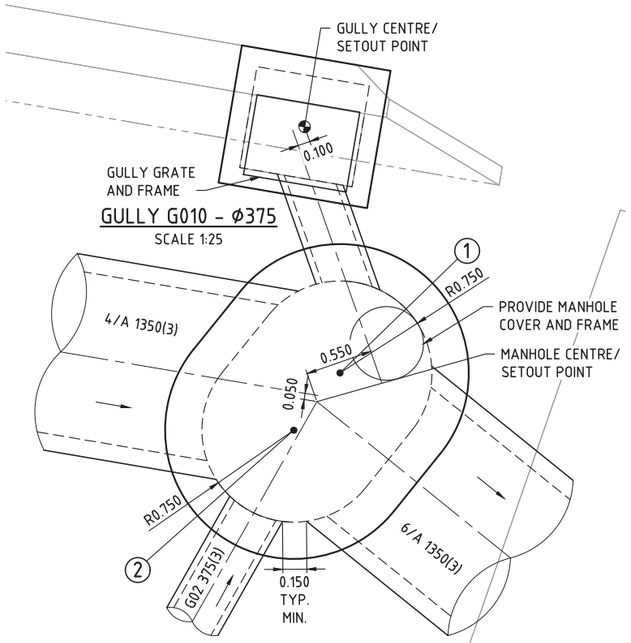
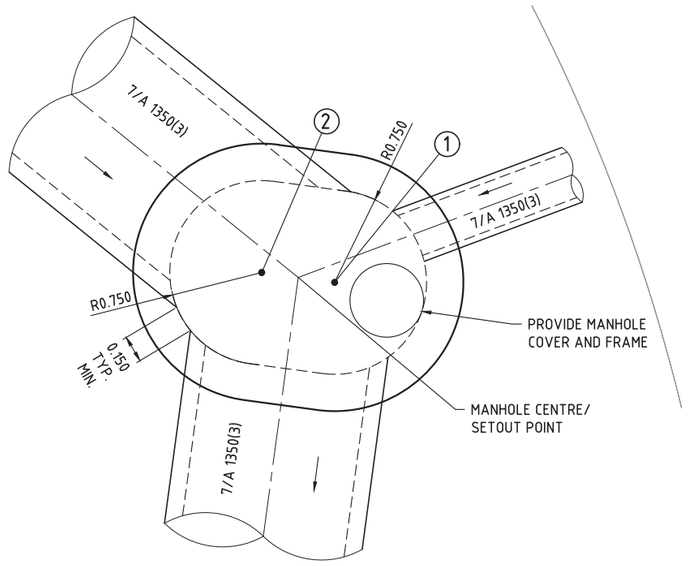


MANHOLE 5/A - ø1500 EXT. 600

SCALE 1:25

SETOUT TABLE

POINT	EASTING	NORTHING
1	502566.146	6974898.385
2	502565.770	6974897.919

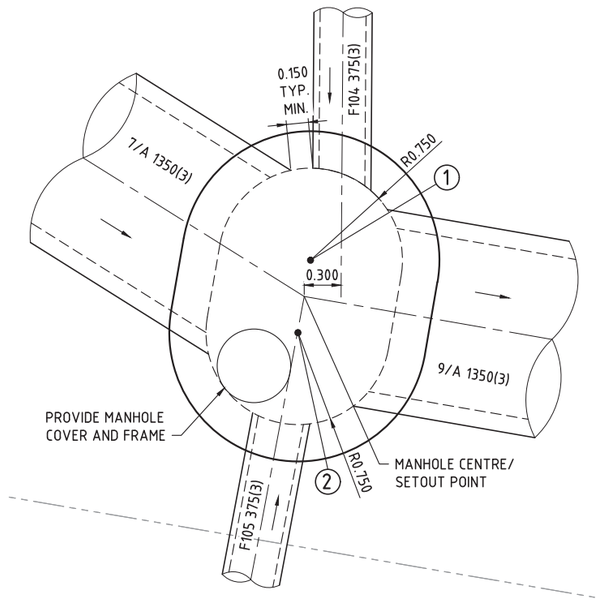


MANHOLE 6/A - ø1500 EXT. 600

SCALE 1:25

SETOUT TABLE

POINT	EASTING	NORTHING
1	502576.656	6974889.716
2	502576.062	6974889.796

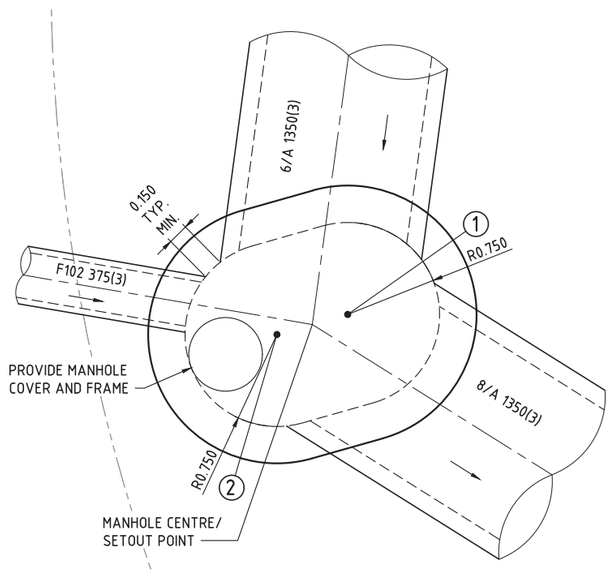


MANHOLE 8/A - ø1500 EXT. 600

SCALE 1:25

SETOUT TABLE

POINT	EASTING	NORTHING
1	502589.260	6974842.537
2	502589.158	6974841.945



MANHOLE 7/A - ø1500 EXT. 600

SCALE 1:25

SETOUT TABLE

POINT	EASTING	NORTHING
1	502571.746	6974853.447
2	502571.168	6974853.283

SCALE

0.5 0 0.5 1.0 1.5 2.0 2.5m

1 : 25 (A1 UNREDUCED)

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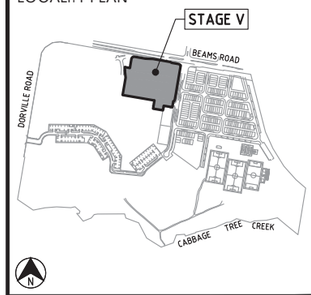
NORTH

LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client

ECONOMIC
DEVELOPMENT
QUEENSLAND (EDQ)

Project

CARSELDINE VILLAGE
STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
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www.kngroup.com.au

Approved

M. Shaw

Digitally signed by
Mark Shaw RPEQ
17544
Date: 2023.11.02
07:36:40+10'00'

Drawing Title

STORMWATER
MANHOLE DETAILS
SHEET 2

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	19 of 20

	Drawing No	Revision
A1	21-121-19	A

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Client: ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)
Project: CARSELDINE VILLAGE – STAGE V
Prepared By: Jason Burton Date: 08th August 2023
Reviewed By: Mark Shaw Date: 08th August 2023

Safety in Design Analysis

- Complete Safety in Design Analysis by populating the table where applicable with all of the relevant safety issues for the project. For example:

☒Positioning of new services adjacent to existing live services	☒Slope Stability
☒Construction adjacent to existing road carriageways	☒Retaining Walls
☒Pedestrians	☒Dust Control
☒Civil Construction Workers	☒Erosion and Sediment Control/Management
☒Maintenance Workers	☒Sediment Basin Construction
☒Work Place Health and Safety Constraints	☐Wetland/Dam Construction
☐Unusual material handling	☒Working under traffic
☒Falls from heights	
☒Underground Services (existing)	Project Specific Design Elements:
☒Electrical Service Installation	
☒Gas Service Installation	
☒Communication Installation	
☐Traffic Signal Installation	
☒Landscape Workers	
☒Line marking Workers	
☒Excavation – open cut trenching - Trench excavation depths	
☐Tunnel Boring	
☒Confined Spaces	
☒Lifting of loads	
☒Unloading of materials and storage	
☐Storage of hazardous materials	
☒Geotechnical investigation – works	
☒Bulk Earthworks	

☒List all relevant safety studies

The following table summarises the safety in design issues considered.

Section of Works	Identify any Potential Incident or Hazard	Consequence	Likelihood	Risk Rating	Risk Control Measures	Consequence	Likelihood	Residual Risk Rating (after design applied)	Risk Manager
Earthworks Material Investigation	Geotechnical Investigation	C	3	S	SWMS required by Contractor	D	3	M	Contractor
Road/Earthworks Works	Pedestrians Injury	D	3	M	TMP to be provided by Contractor to exclude pedestrians from work site	E	3	L	Contractor
	Civil Construction Workers – Injury	A	4	H	TMP and SWMS required for all activities	C	2	S	Contractor
	Maintenance Workers	A	4	H	TMP and SWMS required for all activities	C	3	S	Contractor
	Underground Services (Existing)	A	3	H	DBYD information to be sort prior to design. Existing to be located by survey if applicable to design. All existing services to be located and depths confirmed prior to commencement. SWMS to be provided by Contractor	C	2	S	Designer/ Contractor
Working adjacent to existing Infrastructure	Conflict between construction equipment / personnel and live infrastructure in particular Power lines	B	4	S	All existing services highlighted in the documentation. Contractor to complete DBYD search before commencing works. SWMS to be provided by Contractor	C	4	M	Designer/ Contractor
Service trench/ pipe installation	Location of all trenches to provide clearance to all other services and all structures or battered embankments	A	4	H	Mains located with safe working clearance to existing pressure mains, structures and battered embankments	C	4	M	Designer
	Trench depth	A	4	M	Depth of trenches minimized for both safety and cost efficiency	C	4	M	Designer
Works within Confined Spaces	Construction of stormwater, sewer, water and wetland structures	A	4	M	Contractor to ensure works undertaken in a manner complying with safe work method statements	D	5	L	Contractor
Silt and Erosion Control	Public access to water retaining temporary sediment basins	A	5	S	Protection measures – that is fencing of all water retaining structures with side slopes greater than 1 in 5 as described in International Erosion Control Association (Australasian) Table B9	C	4	M	Designer/ Contractor

RISK ASSESSMENT AND CONTROL

Risk Assessment			
Select **one** category from each of the columns below that best represents the likely outcome if the potential hazard actually did occur. For each consequence consider the **most likely outcome** and **not** the 'absolute worst' case.			
Consequence		**Likelihood**	
A	Death – major environmental damage	1	Certain
B	Permanent Disability – severe environmental damage	2	Probable
C	Lost Time Injury – moderate environmental damage	3	Possible
D	Medical Treatment Injury – minor environmental damage	4	Unlikely
E	First Aid Treatment	5	Very Unlikely

RISK RATING

H: High Risk **S: Significant Risk**

M: Moderate Risk **L: Low Risk**

Read the Risk Rating from the matrix below:

Risk Assessment Matrix	A	B	C	D	E
1	H	H	H	S	S
2	H	H	S	S	M
3	H	H	S	M	L
4	H	S	M	L	L
5	S	S	M	L	L

Certain - means an event or situation that is happening more or less all the time, including continuous situations
Permanent Disability – means a disability, such as loss of a limb or eyesight, loss of hearing, chronic skin disorder, chronic back disorder, emphysema, and the like

Probable – means an event or situation that occurs or is likely to occur about ten times or more per year
Possible – means an event or situation that occurs or is likely to occur about once per year
Unlikely – means an event or situation that occurs or is likely to occur less frequently than once every ten years

Issued 08th August 2023 Rev - A

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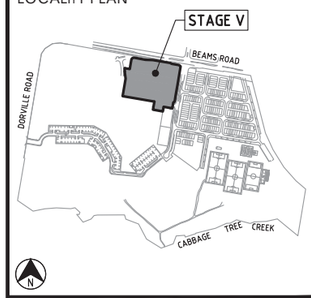

REVISIONS

No	Description	Date	By
A	FOR APPROVAL	30.10.2023	AA

Client
ECONOMIC DEVELOPMENT QUEENSLAND (EDQ)

Project
CARSELDINE VILLAGE STAGE V

kn group
ABN 35 112 53 611
L1, 62 Astor Tce
Spring Hill Q 4000
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Approved
M. Shaw
Digitally signed by Mark Shaw RPEQ 17544
Date: 2023.11.02 07:36:41+10'00'

Drawing Title
SAFETY IN DESIGN

Drawn	Designed	Checked	Date
RW	JB	MS	OCT '23

Scale	Sheet
AS SHOWN	20 of 20

Drawing No	Revision
21-121-20	A

A1

APPENDIX D

COUNCIL CODES

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PO1 Development for filling or excavation minimises visual impacts from retaining walls and earthworks.	AO1 Development ensures that the total height of any cut and fill, whether or not retained, does not exceed: a) 2.5m in a zone in the Industry zones category; b) 1m in all other zones, or if adjoining a sensitive zone.	✓	All earthworks and retaining walls that are proposed will not cause visual impacts and will not impact adversely on the stability of the land.	
PO2 Development of a retaining wall proposed as a result of filling or excavation: a) Is designed and constructed to be fit for purpose; b) Does not impact adversely on significant vegetation; c) Is capable of easy maintenance Editor's note—A retaining wall also needs to comply with the Building Regulation and embankment gradients will need to comply with the Building Regulation. Note—Guidance on the protection of native vegetation is included in	AO2.1 Development of a retaining structure, including footings, surface drainage and subsoil drainage: a) Is wholly contained within the site; b) If the total height to be retained is greater than 1m, then: 1) The retaining wall at the property boundary is not greater than 1m above the ground level; 2) all further terracing from the 1m high boundary retaining wall is 1 vertical unit:1	N/A		

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
the Biodiversity areas planning scheme policy.	horizontal unit; 3) the distance between each successive retaining wall (back of lower wall to face of higher wall) is no less than 1m horizontally to incorporate planting areas. AO2.2 Development of a retaining wall over 1m in height protects significant vegetation on the site and on adjoining land and is designed and constructed in accordance with the structures standards in the Infrastructure design planning scheme policy and certified by a Registered Professional Engineer Queensland. AO2.3 Development provides a retaining wall finish that presents to adjoining land that is maintenance free if the setback is less than 750mm from the boundary. AO2.4 Development for filling only uses clean			

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	fill that does not include any construction rubble or debris.			
PO3 Development ensures that a rock anchor is designed and constructed to be fit for purpose.	AO3 Development ensures that a rock anchor: a) is constructed in accordance with the standards in the Infrastructure design planning scheme policy; b) where it extends beyond the property boundary, is supported by a letter of consent from the adjoining land and building owners.	N/A	If rock anchor is proposed, it will be by the structural or geotechnical engineer.	
PO4 Development protects all services and public utilities.	AO4 Development protects services and public utilities and ensures that any alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities.	✓	Development will protect services and public utilities and will ensure that the alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities.	
PO5 Development provides surface and sub-	AO5 Development ensures all flows and			

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
surface drainage to prevent water seepage, concentration of run-off or ponding of stormwater on adjacent land.	subsoil drainage are directed to a lawful point of discharge of a surface water diversion drain, including to the top or toe of a retaining wall in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	✓	Development will ensure all flows and subsoil drainage are directed to a lawful point of discharge of a surface water diversion drain, including to the top or toe of a retaining wall in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	
PO6 Development ensures that the design and construction of all open drainage works is undertaken in accordance with natural channel design principles, being the development of a stormwater conveyance system for major flows, by using a vegetated open channel or drain that approximates the features and functions of a natural waterway to enhance or improve riparian values of those stormwater conveyance systems. Editor's note—Guidance on natural channel design principles can be found in the Council's publication Natural channel design guidelines.	AO6 No acceptable outcome is prescribed.	**N/A**	Open channel not proposed for the site	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PO7 Development for filling or excavation: a) does not degrade water quality or adversely affect environmental values in receiving waters; b) ensures site sediment and erosion control standards are best practice.	PO7.1 Development for filling or excavation provides water quality treatment that complies with the stormwater drainage section of the Infrastructure design planning scheme policy. PO7.2 Development provides erosion and sediment control standards that are in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	✓	An erosion and sediment control plan will be produced within the detailed design phase of the project and will be in accordance with Appendix E, Table A (construction phase) in the State Planning Policy and Brisbane City Councils stormwater drainage section of the Infrastructure design planning scheme policy.	
PO8 Development for filling or excavation is conducted such that adverse impacts at a sensitive use due to noise and dust are prevented or minimised. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO8.1 Development ensures that no dust emissions extend beyond the boundary of the site, including dust from construction vehicles entering and leaving the site. AO8.2 Development for filling or excavation activity only occurs between the hours of 6:30am and 6:30pm Monday to Saturday, excluding public holidays.	✓	Excavation is conducted such that adverse impacts due to noise and dust are minimised. Excavation activity will only occur between the hours of 6:30am and 6:30pm Monday to Saturday.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PO9 Development ensures that vibration generated by the filling or excavation operation does not exceed the vibration criteria in Table 9.4.3.3.D, Table 9.4.3.3.E, Table 9.4.3.3.F and Table 9.4.3.3.G. Note—A noise management report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO9 Development involving filling or excavation does not cause a ground-borne vibration beyond the boundary of the site.	✓	Vibration generated by excavation operation does not exceed the vibration criteria in Table 9.4.3.3.D, Table 9.4.3.3.E, Table 9.4.3.3.F and Table 9.4.3.3.G.	
PO10 Development ensures that heavy trucks hauling material to and from the site do not affect the amenity of established areas and limits environmental nuisance impact on adjacent land.	AO10 Development ensures that heavy trucks hauling material to and from the site: a) occur for a maximum of 3 weeks; b) use a major road to access the site; c) only use a minor road for the shortest-most-direct route that has the least amount of environmental nuisance if there is no major road alternative.	✓	Heavy trucks hauling material to and from the site will not affect the amenity of established areas and will only use Major Roads. Hauling material to and from site will only occur a maximum of 3 weeks.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PO11 Development for filling or excavation protects the environment and community health and wellbeing from exposure to contaminated land and contaminated material.	AO11 Development does not involve: a) excavation on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register; b) filling with material containing a contaminant.		Excavation works are to be conducted in accordance with a Geotechnical report from a licensed and qualified Geotechnical Engineer.	
PO12 Development provides for: a) landscaping for water conservation purposes; b) water sensitive urban design measures which are employed within the landscape design to maximise stormwater use and to reduce any adverse impacts on the landscape; c) stormwater harvesting to be maximised and any adverse impacts of stormwater minimised.	AO12.1 Development provides landscaping which is designed using the standards in the Landscape design guidelines for water conservation planning scheme policy. AO12.2 Development ensures that the design and requirements for irrigation are in compliance with the standards in the Landscape design guidelines for water conservation planning scheme policy. AO12.3 Development provides areas of pavement, turf and mulched garden beds which are drained. Note—This may be achieved through the	**N/A**	There are no landscaping interfacing with civil for lot 5003.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	provision and/or treatment of swales, spoon drains, field gullies, sub-surface drainage and stormwater connections.			

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
Section A—If for self-assessable or assessable development for a dwelling house including any secondary dwelling Note—Development for a dwelling house does not require assessment against any other sections of this code.				
PO1 Development involving any habitable or non-habitable part of a dwelling house, including any secondary dwelling, is located and designed to: (a) minimise the risk to people from flood hazard; (b) achieve acceptable flood immunity; (c) minimise property impacts from a flood event up to and including the defined flood event; (d) minimise disruption to residents, recovery time and rebuilding or restoration costs after a flood event up to and including the defined flood event.	**AO1.1** Development for a dwelling house including anysecondary dwelling: (a) is not located in the Brisbane River flood planning area 1, 2a or 2b sub-categories or the Creek/waterway flood planning area 1 or 2 sub-categories; or (b) is only located in these sub-categories, if a Registered Professional Engineer Queensland certifies that thedwelling house and any secondary dwelling are structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including thedefined flood event. **AO1.2** Development for a dwelling house and any secondary dwelling complies with the minimum flood planning levels inTable 8.2.11.3.B. Note—If located in an area that has no flood level information available from the Council such as an overland flow path, a Registered Professional Engineer of Queensland with expertise in undertaking flood studies is to certify	✓	**AO1.2 satisfied regarding basement**	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	that the flood level and development levels for the dwelling house and any secondary dwelling achieve the required flood planning levels in Table 8.2.11.3.B. **AO1.2** Development involving a building undercroft complies with the minimum clearance requirements in Table 8.2.11.3.E. Editor's note—For creek/waterway, storm-tide and river flooding, applicable flood planning information is available from Council's FloodWise Property Report. Note—The Flood planning scheme policy provides guidance on undercroft design.			
PO2 Development within the Creek/waterway flood planning area sub-categories or Overland flow flood planning area sub-category: (a) maintains the conveyance of flood waters to allow them to pass predominantly unimpeded through the site; (b) does not concentrate, intensify or divert floodwater onto upstream, downstream or adjacent properties;	**AO2** Development: (a) is not located within the Creek/waterway flood planning area 1, 2 or 3 sub-categories or the Overland flow flood planning area sub-category; or (b) provides an open undercroft area from natural ground level to habitable floor level for any area inundated by the defined flood event; or ote—This undercroft area is not suitable	N/A	The site is currently within the flood planning area however, this development occurs after a subdivision that is currently being undertaken which brings the entire development above the flood planning level. This criteria would have been applicable to that subdivision development.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
(c) will not result in a material increase in flood levels or flood hazard on upstream, downstream or adjacent properties.	for providing non-habitable rooms, secure storage of valuables, or future enclosing for storage or car parking. The clear area may include structural elements such as columns and floor substructure. The Flood planning scheme policyprovides guidance on undercroft design. Editor's note—An open undercroft design may be achieved through a 'valance' treatment around the perimeter of an otherwise internally clear undercroft. Editor's note—For Creek/waterway, storm-tide and river flooding, applicable flood planning information is available from Council'sFloodWise Property Report. (c) report from a Registered Professional Engineer Queensland certifies that the development in the Creek/waterway flood planning area or Overland flow flood planning area sub-categories will not result in a material increase in flood level or flood hazard on upstream, downstream or adjacent properties. Note—Flood studies demonstrate that the development and engineering design methods conform to the			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.			
Section B—If self-assessable or assessable development other than for a dwelling house or reconfiguring a lot Note—If self-assessable development complies with the acceptable outcomes of this part, no further assessment against this code is required.				
PO3 Development: (a) is compatible with flood hazard in a defined flood event; (b) minimises the risk to people from flood hazard; (c) does not reduce the ability of evacuation resources including emergency services to access and evacuate the site in a flood emergency, with consideration to the scale of the development; (d) minimises impacts on property from flooding; (e) minimises disruption to residents, business or site operations and recovery time due to flooding; (f) minimises the need to rebuild structures after a flood event greater than the defined flood event. Note—Where Table 8.2.11.3.C identifies that a flood risk assessment is required, compliance with this performance outcome can be achieved by submitting a	**AO3** Development for a material change of use complies with Table 8.2.11.3.C.	✓	Freeboard requirements for buildings are satisfied.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
flood risk assessment, which may be included within a flood study, addressing the criteria within this performance solution. Preparing flood risk assessments and flood studies is required to be in accordance with the Flood planning scheme policy. Note—An emergency management plan prepared in accordance with the Flood planning scheme policy, which sets out procedures for evacuation due to flooding may be used to demonstrate compliance with this performance outcome.				
PO4 Development for a park ensures that the design of a park and location of structures and facilities responds to the flood hazard and balances the safety of intended users with: (a) maintaining continuity of operations; (b) impacts of flooding on asset life and ongoing maintenance costs; (c) efficient recovery after flood events; (d) recreational benefits to the city; (e) availability of suitable land within the park.	**AO4.1** Development involving a building or structure in a park complies with the flood planning levels specified in Table 8.2.11.3.D. **AO4.2** Development involving a building or structure where Table 8.2.11.3.D does not apply: (a) is not located within the 20% AEP flood extent of any creek/waterway or overland flow path; or (b) is located above the 20% AEP flood level of any creek/waterway or overland	**N/A**	No park involved.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	flow path.			
Section C—If for assessable development other than for a dwelling house				
PO5 Development is located and designed to: (a) minimise the risk to people from flood hazard on the site; (b) minimise flood damage to the development and contents of buildings up to the defined flood event; (c) provide suitable amenity; (d) minimise disruption to residents, recovery time and the need to rebuild structures after a flood event up to and including the defined flood event.	**AO5.1** Development complies with the flood planning levels specified in Table 8.2.11.3.D. Note—If located in an area with no Council-derived flood levels such as an overland flow path, a Registered Professional Engineer Queensland with expertise in undertaking flood studies is to derive the applicable flood level and certify that the development meets the required flood planning levels in Table 8.2.11.3.D. The study is to demonstrate that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy. **AO5.2** Development is: (a) not located in the: i. Brisbane River flood planning area 1, 2a, or 2b sub-categories; ii. Creek/waterway flood planning area 1 or 2 sub-categories; iii. Overland flow flood planning area sub-category; or	✓	Development complies with the flood planning levels specified in Table 8.2.11.3.D.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	(b) only located in these sub-categories if a Registered Professional Engineer Queensland with expertise in undertaking flood studies certifies that: i. the development design, siting and any mitigation measures will ensure the development is structurally adequate to resist hydrostatic, hydrodynamic and debris impact loads associated with flooding up to the defined flood event; and ii. the risk to people is managed to an acceptable level.			
PO6 Development involving essential electrical services or a basement storage area is suitably located and designed to ensure public safety and minimise flood recovery and economic consequences of damage during a flood.	**AO6.1** Development ensures that: (a) all areas containing essential electrical services comply with the flood planning levels in Table 8.2.11.3.D; or (b) if a basement contains essential electrical services or a private basement storage area, the basement is a waterproof structure with walls and floors impermeable to the passage of water with all entry points and services located at or above the relevant flood planning level in Table 8.2.11.3.D. Note—A basement storage area does not include a bike storage room, change room, building maintenance storage and	✓		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	non-critical electrical services. **AO6.2** Development involving a basement that relies on a pumping solution to manage floodwater ingress or for dewatering after a flood provides a redundant pump system with a backup power source for those pumps.			
PO7 Development does not directly or indirectly create a material adverse impact on flood behaviour or drainage on properties that are upstream, downstream or adjacent to the development.	**AO7.1** Development: (a) does not block, or divert floodwaters for any area affected by creek/waterway or overland flow flooding, excluding storm-tide flooding and Brisbane River flooding sources; or (b) does not result in a material increase in flood level or hydraulic hazard on upstream, downstream or adjacent properties. Note—Compliance with this acceptable solution can be demonstrated by the submission of a flood study by a Registered Professional Engineer of Queensland with expertise in undertaking flood studies demonstrating that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure	✓	The development will not cause adverse impact to upstream, downstream or adjacent properties. The development will discharge flows as per existing conditions and provide detention. Overland flow did not pass through the site prior to this development and is not expected to pass through as a consequence of this development.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	design planning scheme policy. **AO7.2** Development retains existing overland flow paths and does not rely wholly on piped solutions to manage major flows. **AO7.3** Development which creates a new overland flow path or significantly modifies an existing overland flow path via earthworks does not materially worsen hydraulic hazard on the site from existing conditions. Note—Compliance with this acceptable solution can be demonstrated by the submission of a flood study by a Registered Professional Engineer of Queensland with expertise in undertaking flood studies demonstrating that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.			
PO8 Development for filling or excavation in an area affected by creek/waterway flooding does not directly, indirectly or cumulatively cause any material increase	**AO8** Development ensures that no filling or excavation greater than 100mm is located in the Creek/waterway flood planning area 1, 2 or 3 sub-categories if	✓	Note that this development is after the current subdivision that is occurring at the moment on site which lifts the whole site above the 1% AEP flood level.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
in flooding or hydraulic hazard or involve significant redistribution of flood storage from high to lower areas in the floodplain. Note—This can be demonstrated by undertaking earthworks in compliance with the Compensatory earthworks planning scheme policy. Note—This part of the code applies to all development other than a dwelling house and any secondary dwelling which involves filling or excavation, whether or not the development application comprises a separate development application for operational work involving filling or excavation.	contained in the 5% AEP flood extent of any Creek/waterway flood planning area sub-category for which no waterway corridor has been mapped in the Waterway corridors overlay.			
PO9 Development ensures that the building and site design: (a) maintains the conveyance capacity of existing overland flow paths and creek/waterways; (b) ensures floodwaters and flood debris can pass predominantly unimpeded under a structure or building to minimise property or building damage, including for a flood larger than the defined flood event; (c) mitigates flood impacts by ensuring	**AO9.1** Development involving a building undercroft in the Creek/waterway flood planning area sub-categories or the Overland flow flood planning area sub-category: (a) complies with the minimum building undercroft clearance requirements in Table 8.2.11.3.E; (b) not located directly above any part of a waterway corridor as mapped in the Waterway corridors overlay.	✓	The development is not expected to affect the conveyance capacity of overland flow through the site.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
that filling, excavation and location of services are designed to allow for the conveyance of floodwater across the site. Note—The Flood planning scheme policy provides guidance on relevant considerations in determining minimum undercroft clearances and treatment of ground level in undercroft areas where floodwater conveyance is required underneath development.	**AO9.2** Development involving a building undercroft in the Creek/waterway flood planning area sub-categories or the Overland flow flood planning area sub category: (a) has a ground level within the undercroft area is free draining; (b) does not involve excavation below ground level of more than 300mm within the undercroft area.			
PO10 Development for vulnerable uses, difficult to evacuate uses or assembly uses optimises vehicular access and efficient evacuation from the development to parts of the road network unaffected by flood hazard, in order to: (a) protect safety of users and emergency services personnel; (b) upport efficient emergency services access and site evacuation with consideration to the scale of development.	**AO10.1** Development for vulnerable uses, difficult to evacuate uses or assembly uses: (a) is not isolated in any event up to the relevant flood planning level specified in Table 8.2.11.3.L; or (b) has direct vehicle access to a critical route or interim critical route in the Critical infrastructure and movement network overlay for evacuation in a flood; or (c) can achieve vehicular evacuation to a suitable flood-free location.	**N/A**		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
Note—A flood risk assessment may be required to address the performance outcomes or acceptable solutions which deal with evacuation and isolation arrangements, and the ability to take refuge. The Flood planning scheme policy provides information for undertaking flood risk assessments.	Note—A suitable flood-free location is of a size and nature sufficient to provide for the size and characteristics of the population likely to need evacuation to that area.			
PO11 Development has access which, having regard to hydraulic hazard, provides for safe vehicular and pedestrian movement and emergency services access to adjoining roads.	**AO11.1** Development provides an access or driveway into the site which is: (a) trafficable during the defined flood event; (b) not located in the Creek/waterway flood planning area 1 sub-category; (c) not located in the Overland flow flood planning area sub-category if the hydraulic hazard is unsafe in the defined flood event; (d) the access or driveway is not inundated by a 10% AEP flood. **AO11.2** Development located in the Creek/waterway flood planning area 1, 2, 3 or 4 sub-categories locates any disabled access in the highest part of the site. Note—explanation of hydraulic hazard provided in the Flood planning scheme	A/S	The adjacent road may experience temporary overland flow blocking access to the site. This overland flow is expected to be temporary.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	policy.			
PO12 Development involving a new road, a bridge or culvert is designed to minimise impacts to flood behaviour, minimise disruption to traffic during a flood and allow for emergency access.	**AO12** Development involving a new road complies with the flood planning levels in Table 8.2.11.3.F.	**N/A**	The development does not involve a new road, a bridge or a culvert.	
PO13 Development for pedestrian and cyclist paths: (a) provides a suitable level of trafficability; (b) manages the impacts of flooding on asset life and ongoing maintenance costs; (c) balances route availability with recreational and transport connectivity benefits to the city.	**AO13.1** Development for cyclist and pedestrian facilities other than on public roads, including those traversing through a park and adjacent to a watercourse and overland flow path, are located above the 39% AEP (2 year ARI) flood immunity from all flooding sources. Note—If the site is subject to more than one type of flooding, the requirement that affords the greatest level of protection will apply. **AO13.1** All new on-road cyclist and pedestrian facilities comply with the flood planning levels and trafficability standards for the applicable category of road in Table 8.2.11.3.F or Table 8.2.11.3.K.	**N/A**	Development of cyclist and pedestrian facilities other than on public roads, including those traversing through a park and adjacent to a watercourse and overland flow path, will be located above the 39% AEP (2 year ARI) flood immunity from all flooding sources.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO14 Development which increases the residential population within the Brisbane River flood planning area sub-categories minimises the risk to people in all flood events with consideration to flood hazard, including warning time.	**AO14** Development in the Brisbane River flood planning area sub-categories in areas where the residential flood level is greater than 12.8m AHD involving: (a) an increase in the number of residential dwellings; or (b) additional residential lots; or (c) is not subject to an unsafe hydraulic hazard in the 0.2% AEP flood event. Note—Explanation of a hydraulic hazard is provided in the Flood planning scheme policy.	**N/A**		
Additional criteria for essential community infrastructure				
PO15 Development involving essential community infrastructure: (a) remains functional to serve community need during and immediately after a flood event, or is part of a network that is able to maintain the function of the essential community infrastructure when parts of the development are unable to function during or after a flood; (b) is designed, sited and operated to avoid adverse impacts on the community or the environment due to the impacts of flooding on infrastructure, facilities or access and egress routes;	**AO15** Development involving essential community infrastructure: (a) is ancillary to and not relied upon for the provision of the essential service during a flood; or (b) is located above the flood planning levels in Table 8.2.11.3.G; (c) has access to or provides the necessary back-up emergency electricity and communications supply in times of flood; (d) is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by the flood event	**N/A**		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
(c) is able to remain functional or is part of a network which is able to remain functional even when other infrastructure or services (such as electricity supply) may be compromised in a flood event; (d) contains mitigation measures which are not entirely dependent on human activation to respond to a flood event. Note—Protection of function is required up to and including the flood event in Table 8.2.11.3.G.	listed for the development type in Table 8.2.11.3.G; (e) that services a local area: i. is able to be accessed in times of flood to service local community needs up to the event listed for that development type in Table 8.2.11.3.G; or ii. is consistent with the standards contained in the Management of hazardous chemicals in flood prone areas planning scheme policy and can operate without risk of environmental harm during a flood event. Note—The Management of hazardous chemicals in flood prone areas planning scheme policy sets out further information and processes including risk assessment for the management of hazardous chemicals in flood planning areas.			
Additional criteria if development involves the processes in Table 8.2.11.3.H				
PO16 Development involving the storage and handling of hazardous materials avoids or minimises risks to public health and safety and the environment, by: (a) protecting underground tanks for hazardous materials against the forces of	**AO16** (a) Development does not include the storage or handling of hazardous chemicals that are equivalent to or exceed the threshold quantities in Table 8.2.11.3.M. (b) Development involving the processes	**N/A**		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
buoyancy, velocity flow and debris impacts; (b) securing above-ground tanks for hazardous materials against flotation and lateral movement; (c) preventing damage to hazardous materials pipework or entry of floodwater into hazardous materials pipework; (d) preventing damage to or off-site release of packages, drums or containers storing hazardous materials. Note—A chemical hazards flood risk report prepared in accordance with the Management of hazardous chemicals in flood prone areas planning scheme policy can assist in demonstrating achievement of this performance outcome. Note—A pump drainage system is not an acceptable measure to meet the performance outcome.	listed in Table 8.2.11.3.H: i. where located in the Flood overlay area, occurs only in the Creek/waterway flood planning area 5 sub-category or the Brisbane River flood planning area 5 sub-category; or ii. is consistent with the standards contained in the Management of hazardous chemicals in flood prone areas planning scheme policy and can operate without risk of environmental harm during a flood event. Note—The Management of hazardous chemicals in flood prone areas planning scheme policy sets out further information and processes including risk assessment for the management of hazardous chemicals in flood planning areas.			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
Additional criteria for reconfiguring a lot				
PO17 Development locates and designs all lots resulting from reconfiguring a lot to: (a) minimise the risk to people from flood hazard; (b) minimise damage to property from flood hazard; (c) facilitate safe and efficient evacuation. Note— • Consideration of all floods up to the probably maximum flood is relevant to minimising the risk to people. • Flood warning time is not considered sufficient in the Creek/waterway planning area sub-categories or the Overland flow flood planning area sub-category. • Filling above the flood planning level for a flood event greater than the defined flood event cannot be assumed to mitigate the flood hazard.	**AO17.1** Development creating new lots is to comply with Table 8.2.11.3.I. **AO17.2** Development provides for reconfiguring a lot design that achieves a road and lot layout which: (a) provides trafficable vehicular egress for evacuation during a defined flood event; (b) optimises hazard-free movement away from sources of flood hazard within the development. Note—Further advice on road and lot layout is contained in the Flood planning scheme policy. **AO17.3** Development which creates a new residential lot in an area subject to Brisbane River flooding, if the residential flood level is greater than 12.8m AHD is not subject to a hydraulic hazard greater than 0.6m^2/s DV or 0.6m deep in a 0.2% AEP flood. Note—Refer to the Flood planning scheme policy for further explanation on the 0.2% AEP flood.	**N/A**	No reconfiguration of a lot.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO18 Development involving reconfiguring a lot: (a) minimises the risk to people from flood hazard; (b) creates safe evacuation routes or avoids isolation of the development during a flood greater than the defined flood event; (c) minimises damage to property and services; (d) provides lots and roads that are not frequently flooded or subject to nuisance ponding or seepage; (e) ensures lots created for park or private open space minimise the risk to people from flood hazard and are fit for purpose; (f) provides a lot that is not substantially burdened by flood mitigation infrastructure.	**AO18.1** Development involving reconfiguring a lot ensures: (a) all lots comply with the flood planning levels in Table 8.2.11.3.J; (b) a new road complies with the flood planning levels in Table 8.2.11.3.F. **AO18.2** Development involving reconfiguring a lot creating more than 6 residential lots or a lot for industry ensures the flood planning levels of a dedicated road fronting the development or providing primary access within 200m of the development: (a) complies with Table 8.2.11.3.K; or (b) has acceptable trafficability in accordance with the requirements in the Flood planning scheme policy and the Queensland Urban Drainage Manual. Note—The Flood planning scheme policy contains supporting information about trafficability on existing roads and serviceability during floods. **AO18.3** Development protects the conveyance of flood hazard area by providing an easement over the: (a) 2% AEP flood extent for overland flow	**N/A**	No reconfiguration of a lot	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	flooding; (b) 1% AEP flood extent for creek/waterway flooding.			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO1 Development protects the environmental values and ecological health of receiving waters and does not subject assets to accelerated corrosion.	**AO1** Development ensures that: **a)** no potential or actual acid sulfate soils are disturbed; or Note—This can be demonstrated through the submission of an acid sulfate soil investigation report with reference to the Potential and actual acid sulfate soils planning scheme policy **b)** the disturbance impacts in an area that hosts potential acid sulfate soils are appropriately managed, if less than 500m^3 of soil is disturbed and the watertable is not affected; or Note—This can be demonstrated through the submission of an acid sulfate soil investigation report and a preliminary acid sulfate soil management plan, with reference to the Potential and actual acid sulfate soils planning scheme policy. **c)** impacts are appropriately managed if 500m^3 or more of	✓	The development is within the Potential and Actual Acid Sulfate Soil Overlay and disturbs more than 500m^3 of soil. An Acid Sulfate Investigation and Management Plan will be developed by a geotechnical engineer in the detailed design phase of the project. This will be in accordance with the Potential and actual acid sulfate soils planning scheme policy.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	soil is disturbed or the watertable in an area that hosts potential or actual acid sulfate soils is affected. Note—This can be demonstrated through the submission of an acid sulfate soil investigation report and a full acid sulfate soil management plan, with reference to the Potential and actual acid sulfate soils planning scheme policy using levels of testing commensurate with the level of risk. If the investigation demonstrates that an acid sulfate soil management plan is not required, only an investigation report is required.			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal